water for life

Progress Report

December 1, 2008-March 31, 2011

Government of Alberta

water for life

ISBN 978-0-7785-8976-1

Printed January 2012

TABLE OF CONTENTS

INTRODUCTION

Summary of the *Water for Life* strategy 5

Table of Ministries responsible under the *Water for Life* action plan 6

Purpose of the progress report 7

Publications 2008 – 2009

- Strategy's renewal 10
- Alberta Water Council: Review of Implementation Progress of *Water for Life* 2008–2008 10
- *Water for Life* action plan 11

Water for Life timelines 11

THREE GOALS AND THREE KEY DIRECTIONS

Safe, Secure Drinking Water 13

Healthy Aquatic Ecosystems 23

Reliable, Quality Water Supplies for a sustainable economy 33

Knowledge and Research 41

Partnerships 49

Water Conservation 61

Introduction

Water for Life: Alberta's Strategy for Sustainability is the Government of Alberta's commitment to preserving, protecting, and effectively managing the province's water resources. The strategy is comprised of three goals and three key directions:

Goals

Safe, secure drinking water

Healthy aquatic ecosystems

Reliable, quality water supplies for a sustainable economy

Key Directions

Knowledge and research

Partnerships

Water conservation

The purpose of the goals and key directions of the *Water for Life* strategy is to address water in a holistic manner, incorporating social, economic, and environmental aspects of its protection, management, and use.

Water for Life is a Government of Alberta strategy whose tasks, responsibilities, and actions flow across many departments. By employing the strategy's overarching goals and directions, government response and action can be coordinated for the entire province.

Water for Life goals and key directions and the Government of Alberta ministries responsible under the *Water for Life* action plan

Water for Life **Goals and Key Actions**	**Ministries Responsible**
Safe, Secure Drinking Water	Alberta Environment and Water Alberta Agriculture and Rural Development Alberta Health and Wellness Alberta Municipal Affairs Alberta Tourism, Parks, and Recreation Alberta Transportation
Healthy Aquatic Ecosystems	Alberta Environment and Water Alberta Agriculture and Rural Development* Alberta Sustainable Resource Development
Reliable, Quality Water Supplies for a Sustainable Economy	Alberta Environment and Water Alberta Energy* Alberta Transportation* Alberta Treasury Board and Enterprise*
Knowledge and Research	Alberta Environment and Water Alberta Advanced Education and Technology* Alberta Agriculture and Rural Development* Alberta Energy* Alberta Sustainable Resource Development*
Partnerships	Alberta Environment and Water Alberta Agriculture and Rural Development* Alberta Energy* Alberta Health and Wellness* Alberta Sustainable Resource Development*
Water Conservation	Alberta Environment and Water Alberta Agriculture and Rural Development* Alberta Energy* Alberta Municipal Affairs*

* Supporting Ministry

Purpose of the report

The *Water for Life* Progress Report highlights a selection of the activities, programs, and tools being pursued under the *Water for Life* strategy within the timeframe of December 1, 2008 to March 31, 2011. The report does not attempt to list every activity occurring under the *Water for Life* strategy as the goal of managing and protecting water is made up of numerous projects and many initiatives.

Each section of the report contains a selection of accomplishments and a featured story. A table outlining actions planned for the goals or key direction is also included. Each table contains a series of icons to indicate the status for individual *Water for Life* actions.

Status Chart icons

- Planning stage
- Stakeholder engagement stage
- Moving toward final approval
- Ongoing development or implementation through various Government of Alberta programs
- Not yet initiated due to dependency on short/medium term deliverable
- Completed

Actions completed under the original *Water for Life* strategy prior to renewal

At the time of the renewal of the *Water for Life* strategy in November 2008, the Government of Alberta had completed 21 actions under the original strategy. The three goals and three key directions of the strategy were represented in the completed actions and included the following:

GOAL: SAFE, SECURE DRINKING WATER	**Key action: Complete an assessment of all drinking water facilities in Alberta.** • A comprehensive review of Alberta's water treatment facilities (2004) identified infrastructure funding priorities to ensure the health and safety of drinking water. **Key action: Establish a public awareness and education program to ensure Albertans have easy access to water resource information and services.** • Drinking water information is online.
GOAL: HEALTHY, AQUATIC ECOSYSTEMS	**Key action: Complete an initial assessment of the status of aquatic ecosystems, including lakes, wetlands, streams and rivers. Complete an assessment of Alberta's surface water quality.** • In a status assessment of Alberta's aquatic ecosystems, these two actions were combined. • The Scope of Work for the Initial Assessment of Aquatic Ecosystem Health in Alberta and Information synthesis and initial assessment of the status and health of aquatic ecosystems in Alberta: surface water quality, sediment quality and non-fish biota Report helped lay the foundation for healthy aquatic ecosystem work. • The Aquatic Ecosystems – Review of Issues and Monitoring Techniques helped define healthy aquatic ecosystems.

GOAL: RELIABLE, QUALITY WATER SUPPLIES FOR A SUSTAINABLE ECONOMY	**Key action: Establish water conservation objectives for the South Saskatchewan River Basin.** • Government approved the South Saskatchewan River Basin Water Management Plan (2007). **Key action: Monitor, evaluate and report on the water allocation transfer system.** • Alberta Environment and Water enhanced its internal Environmental Management System to include water transfer records, to facilitate a water transfer system in the South Saskatchewan River Basin.
KEY DIRECTION: RESEARCH AND KNOWLEDGE	**Key action: Establish a provincial, multi disciplinary water research centre.** • Alberta Innovates Energy and Environment Solutions (formerly the Alberta Water Research Institute) coordinates world class and leading edge research to support *Water for Life*. **Key action: Establish a provincial water information centre.** • The Alberta water information centre consolidates and delivers specific water information to users.
KEY DIRECTION: PARTNERSHIPS	**Key action: Establish a provincial water advisory council.** • The Alberta Water Council (2004) monitors and stewards implementation of *Water for Life* and champions achievement of the strategy's three goals. **Key action: Establish watershed planning and advisory councils.** • Watershed Planning and Advisory Councils (WPACs) assess their watershed's state and develop a plan to address issues. Nine watersheds have organizations formally recognized as WPACs.
KEY DIRECTION: WATER CONSERVATION	**Key action: Prepare water conservation and productivity plans for all water using sectors.** • The Alberta Water Council released Water Conservation, Efficiency and Productivity: Principles, Definitions, Performance Measures and Environmental Indicators Report (2007). • Two reports on water use in the oil and gas sector were released, providing policy and guidelines (2007) for oilfield injection. **Key action: Establish a system to monitor and report actual water use by all sectors on an on-going basis.** • Government established a voluntary water use reporting system (2006) for licence holders to submit water use data.

A complete list of all completed activities can be found on the *Water for Life* website at www.waterforlife.alberta.ca.

The Strategy's Renewal, 2008

In 2007, as part of his Mandate letter received from the Premier, the Minister of Environment, Rob Renner, requested the Alberta Water Council undertake a review of the *Water for Life* strategy. The purpose of the review was to ensure the goals of the strategy remained relevant and the province's water priorities continued on the right track.

The Alberta Water Council reviewed the strategy and presented a report in January 2008. The Council's report found the goals and key directions of the strategy remained valid and the strategy received the approval of Cabinet in the fall of 2008, in time for its fifth anniversary. While approving its original mandate, the renewal also helped to focus the strategy on areas that had fallen slightly behind on achievements and encouraged an overall increase in momentum to deal with the water challenges facing the province.

www.waterforlife.alberta.ca

Alberta Water Council Review of Implementation Progress of *Water for Life* 2006-2008

One of the roles of the Alberta Water Council is to review the implementation progress of the *Water for Life* strategy. The Council reviewed the strategy again in 2008, which was the halfway point of its original ten year implementation timeline. The Council's report, issued in September 2009, noted that four of the original six elements (safe, secure drinking water; reliable, quality water supplies for a sustainable economy; knowledge and research; and partnerships) were on schedule, while progress was being made on the two that fell behind (healthy aquatic ecosystems, water conservation). Three challenges were identified:

- Land, water, air, biodiversity, and the cumulative impacts of development must be managed in an integrated and coordinated manner;
- *Water for Life* partnerships must have adequate resourcing available to ensure the necessary implementation actions do not outstrip stakeholder and partnership capacity to complete them; and
- *Water for Life* requires champions within the Government of Alberta, industry, the environmental community, other levels of government, and within all of its partnerships for successful implementation.

Two areas that affect all goals were also identified:

- Communication and education – to help instil a conservation ethic in Albertans; and
- Source water protection – to improve overall provincial water quality.

The Council concluded that the overall uncertainty of how land use planning and water management will link affects many areas of the strategy.

Overall, the Council concluded the *Water for Life* strategy continues to have significant momentum and remains a vital part of water management in Alberta. It also noted that *Water for Life* is not solely a government initiative, but requires commitment and involvement from partners. It recognized the strategy is complex and challenging, especially given the pace of development in the province since the strategy's inception. Effective adaptive management was also cited as a way to address gaps and timeline lapses resulting from challenges. The release of updated objectives and actions through the *Water for Life* action plan was anticipated and felt to be an important step in refocusing priorities under the strategy.

http://www.albertawatercouncil.ca/Projects/WaterforLifeImplementationReview/tabid/102/Default.aspx

Water for Life action plan, 2009

The recommendations made by the Alberta Water Council, as well as the renewed focus of the strategy, provided the basis for the *Water for Life* action plan, released in the fall of 2009. The action plan outlines the 31 key actions to be taken under the *Water for Life* strategy on a short, medium, and long term timetable, as well as 62 deliverables.

The action plan is well aligned with Alberta's Provincial Energy Strategy (2008) and Land use Framework (2008) and cumulative effects management system. It also outlines priority actions to support the Government of Alberta's direction on regional planning and transformation to a cumulative effects management system. Other key actions include:

- finalizing and implementing a new wetlands policy for Alberta;
- reviewing and renewing Alberta's current water allocation system;
- developing a sustainable approach to regional drinking and waste water systems;
- addressing the risks of climate change impacts on Alberta's water supply;
- integrating watershed planning with regional planning and cumulative effects;
- enhancing water monitoring, evaluation and public reporting;
- instituting mandatory water use reporting; and
- developing and implementing sector water conservation, efficiency and productivity plans.

The *Water for Life* action plan is a road map for achieving the goals and key directions within the strategy through to 2019. It is also intended to be an adaptive plan that can be revised based on emerging issues, challenges, and Government of Alberta priorities.

www.waterforlife.alberta.ca

Water for Life timelines: Yesterday, Today, and Tomorrow

The actions under the goals and key directions of the *Water for Life* strategy fall into three categories: short, medium, and long term. The deadline for short term actions is 2012, for medium term actions, 2015, and for long term actions, 2019.

The completion of an action does not always mean its ultimate end. Frequently, the knowledge gained from a short term action, such as a study or assessment, becomes a building block to another action. So in effect short term actions can contribute to longer term ones.

Due to the length of their timelines, long term actions can be affected by new research and pressures and changing circumstances. The expansive growth in the province has increased pressure on *Water for Life* actions, lengthening the term of some as more information is required, as well as creating situations where more needs to be done at once.

Perhaps one of the greatest benefits of the *Water for Life* strategy is the ability to set both priorities and timelines under it. We know what we need to do, and can see where we need to go. The comprehensive approach of the strategy also makes connections clearer when it comes to making decisions on what needs to be done and when. *Water for Life* is not only a strategy for present circumstances, but a commitment to the future.

GOAL:
SAFE, SECURE DRINKING WATER

Ensuring quality drinking water for all Albertans is a priority. Timely access to information about drinking water quality, reliable management of public water systems, education on best practices for well owners, development of disease surveillance systems, source protection, and activities to improve drinking water and wastewater facilities are all part of this first goal of the *Water for Life* strategy.

Safe, Secure Drinking Water

Since the start of the *Water for Life* strategy in 2003, the province has spent over $400 million on improving drinking water and wastewater facilities and infrastructure. Guided by the action plan, this goal continues to move forward.

Key Action 1.1 Provide and maintain availability and accessibility to information on private water systems:

"Working Well"

Since its inception in 2008, the Working Well program has provided well owners across Alberta with information on managing their water resource. Well owners are provided with a variety of information that includes protecting groundwater supply, designing and constructing of wells, shock chlorinating wells, plugging old wells, and upgrading old well pits to conform with new provincial regulations. The program's website also provides links to well management log sheets, testing log sheets, and additional sources of information on groundwater and well management.

The workshops for well owners offered by the program are very popular. Between January 2008 and March 2011, 97 workshops were attended by 2790 well owners.

On March 31, 2011 the Working Well program ended its three-year phase as a pilot program. Program partners including Alberta Agriculture and Rural Development, Alberta Health and Wellness, Agriculture and Agri-Food Canada, local rural municipalities, and the Water Well Drilling Association continue to see value in the program and are committed to operating it into the future.

http://environment.alberta.ca/3081.html

Key Action 1.2 Review and improve the management of small public drinking water systems:

Small public drinking water systems

With funding from Alberta Health and Wellness, Alberta Health Services has completed an inventory and audit of small public drinking water systems that are not regulated under the *Environmental Protection and Enhancement Act*. A new standard for these systems is being developed as well as online resources and training for the operators of these small public systems.

Key Action 1.3 Work cooperatively with First Nations, Métis communities, and the federal government to ensure safe drinking water in Aboriginal communities in Alberta:

Water needs assessments

The water needs assessments will assist with understanding the current and future water uses and needs of First Nations participating in this initiative for up to 50 years. The Blood Tribe, Siksika Nation and Maskwacis Cree Nations have completed this initiative and Stoney and Piikani are preparing to initiate water needs assessment in the 2011 fiscal year. Further work to engage First Nations in Treaty 6 and Treaty 8 will continue through a collaboratively established process for discussing water needs and community issues around water.

Alberta Environment and Water is partnering with Indian and Northern Affairs Canada (INAC) to deliver the First Nations' water needs assessments. Information derived from the assessments will also be useful for watershed management planning in Alberta and will help identify priority areas for First Nations' water needs. Such information will also be integrated with INAC's Protocol for Safe Drinking Water in First Nations Communities and the Government of Canada's First Nations Water and Wastewater Action Plan.

Key Action 1.4 Develop a waterborne disease surveillance system and undertake contaminant research:

Domestic Well Water Survey

As part of their commitment to *Water for Life* actions, Alberta Health and Wellness conducted a domestic well water survey in the Beaver River Basin. The survey was completed in December 2009. In a second phase, the survey has been extended to other selected areas of Alberta and will be completed by June 2011. It includes testing for routine chemistry, trace elements, arsenic speciation, and in some areas, pesticides.

Waterborne Health Risk Management System and Contaminant Research

Alberta Health and Wellness is also working with the Provincial Laboratory for Public Health on a health risk management system. Research is also continuing on virus testing, arsenic, and cytotoxicity and to develop methods to detect contaminants in water and fish.

Key Action 1.5 Design and implement regional drinking water and wastewater solutions:

Water for Life Funding for Regional Systems

As of June 2009, funding for capital costs of installing the initial monitoring and control equipment for operational consortia is available for *Water for Life* funding at 90 per cent. Introduced in 2006, the water strategy initiative is only available for new regional water and wastewater systems or new extensions to existing regional water or wastewater systems.

http://www.transportation.alberta.ca/2778.htm#2.3.3%20Project%20eligibility%20criteria

Key Action 1.6 Develop innovative approach to build and ensure long-term operational capacity in smaller Alberta communities:

Performance Assurance

Performance assurance is a multi-faceted approach consisting of facility approvals, technical assistance, compliance inspections and investigation, and enforcement. Approvals and registrations are issued for the construction and operation of drinking water facilities. Compliance assistance is preventative in nature and encourages continuous improvement and process optimization. Enforcement addresses instances when operators or owners fail to fulfill their obligations under their approval. In all three of these areas, staff conduct routine monitoring and inspections to ensure that they are knowledgeable regarding the approved drinking waterworks systems within their region.

http://environment.alberta.ca/1482.html

Key Action 1.7 Update water quality programs to support source protection information and planning:

Watershed Planning and Advisory Councils incorporate drinking water source protection into watershed planning

A number of Watershed Planning and Advisory Councils, watershed stewardship groups, and lake stewardship groups have incorporated source water protection into their various reports and strategic plans. These include the updated Beaver River Watershed Alliance State of the Watershed Report, the Moose Lake Sub Watershed Plan, and implementation of the Cold Lake-Beaver River Water Management Plan (2006) and the Elbow River Watershed Water Management Plan (2008). The Bow River Basin Council is currently developing recommendations for source water protection in Phase II of their watershed plan.

Key Action 1.8 Facilitate upgrades to drinking water facilities and wastewater facilities to meet standards and where possible integrate into regional systems.

Alberta Municipal Water/Wastewater Partnership (AMWWP)

The Alberta Municipal Water/Wastewater Partnership provides cost-shared funding to eligible municipalities to assist in the construction of municipal water supply and treatment and wastewater treatment and disposal facilities. Various initiatives have been included in the program to ensure the needs of Alberta municipalities are met. The program ensures that Albertans have access to safe water supplies and adequate wastewater treatment.

Funding is provided to cities (under 45,000 population), towns, villages, summer villages, regional commissions and eligible hamlets within rural municipalities. Funding is provided as a percentage of eligible approved project costs. For municipalities under 1,000 population, projects are cost-shared on a 75 per cent Government and 25 per cent municipality basis. For communities over 1,000 population (to a maximum of 45,000 population), grant percentage ratios are calculated by a formula. The percentage ratio declines as the population increases. Municipalities apply for funding on a project by project basis.

http://www.transportation.alberta.ca/2719.htm

Full-Cost Accounting

Full cost accounting assists municipalities by providing a full cost reporting template, in accordance with established accounting standards, specific to drinking water operation. The objective is to ensure that municipalities have accurate information regarding the true cost of producing and supplying quality drinking water for municipalities seeking to improve or build drinking and wastewater facilities.

http://environment.alberta.ca/1483.html

Working Towards Adopting the National Plumbing Code To Allow Reclaimed Water Use

Alberta Municipal Affairs is working toward adoption of the 2010 National Plumbing Code, which contains provisions allowing reclaimed water to be used within a single site. A management framework containing Alberta-specific amendments to the 2010 National Plumbing Code is expected to be finalized in a cross-ministry agreement by the third quarter of 2011. This framework will include implementation mechanisms such as standards and guidelines to ensure that onsite water reclamation systems are designed, installed, and maintained safely and assure acceptable levels of water quality. The framework will also establish approved uses for reclaimed water and provide for a system of managing the data on reclamation systems. Interim measures for the technical review of design systems that are outside the specifications of the 2010 National Plumbing Code currently involves a case by case review by the province's Chief Plumbing Inspector.

Residential Rainwater Harvesting Guidelines

The cross-ministry Reclaimed Water Working Group, which focuses on the wastewater treatment/onsite water reclamation systems management framework, completed the development of residential rainwater harvesting guidelines for Alberta to support *Water for Life* principles of water efficiency and conservation. Along with the rainwater harvesting guidelines, accessible on the ministry website, Alberta Municipal Affairs provides information on amendments to codes, policies, procedures, and other initiatives through this link:

http://municipalaffairs.gov.ab.ca/1171.cfm

Key Action 1.9 Facilitate upgrades to drinking water quality in provincial parks and recreation areas to meet drinking water standards and, where possible, integrate with regional systems.

Upgrades to drinking water quality in provincial parks and recreation areas is ongoing. For the period December 2008 to March 2011 this includes the following provincial parks and recreation areas:

Miquelon Lake Provincial Park	Water Treatment Plant upgrade & lift station equipment
Fish Creek Provincial Park	Sikome Wells upgrades and pumps protection
Cypress Hills Provincial Park	Campground water and sewer upgrades
Park Lake Provincial Park	Water system upgrades and connection to regional water supply
William A. Switzer Provincial Park	Water and sewer systems rehabilitation

http://www.tpr.alberta.ca/parks/default.aspx

	Key Actions		Deliverables	Status	Information
1.1	Provide and maintain the availability and accessibility of information to Albertans on private water systems.	➡	Develop the "Working Well" education extension program for private well owners	ⓘ	http://environment.alberta.ca/01317.html
		➡	Develop and deliver online and print information resources for private water supply owners	ⓘ	Resources are being developed with Alberta Health Services
1.2	Review and improve the management of small public drinking water systems.	➡	Develop operating standards	ⓘ	
		➡	Develop and deliver information resources	ⓘ	
		➡	Conduct an initial audit based on a completed provincial inventory	ⓘ	
1.3	Work cooperatively with First Nations, Métis communities, and the federal government to ensure safe drinking water in Aboriginal communities in Alberta.	➡	Provide ongoing operator training and certification	ⓘ	http://environment.alberta.ca/1482.html (Performance Assurance Page)
		➡	Provide opportunity for participation in regional systems	ⓘ	
		➡	Facilitate water needs assessments with participating First Nations communities	ⓘ	
1.4	Develop a waterborne disease surveillance system and undertake waterborne contaminant research.	➡	Provide ongoing drinking water quality testing and laboratory-based surveillance through the public health laboratories	ⓘ	http://www.albertahealthservices.ca/Advisories/ne-pha-2011-07-14-faq-well-testing.pdf
		➡	Conduct domestic well water surveys of specific contaminants in identified areas	ⓘ	
		➡	Undertake applied research in priority water contaminants and develop a public health risk management support system	ⓘ	
1.5	Design and implement regional drinking water and wastewater solutions.	➡	Review delivery of the provincial drinking and wastewater program including new funding support programs and governance	ⓘ	http://www.transportation.alberta.ca/2778.htm#2.3.3%20Project%20eligibility%20criteria
1.6	Develop innovative approaches to build and ensure long-term operational capacity in smaller Alberta communities.	➡	Develop operator consortiums	ⓘ	http://environment.alberta.ca/1486.html
		➡	Provide ongoing operator training and certification	ⓘ	
1.7	Update water quality programs to support source protection information and planning.	➡	Work with Watershed Planning and Advisory Councils to incorporate drinking water source protection into watershed planning	ⓘ	Watershed management planning is an ongoing activity that will include source water protection
		➡	Develop information on sector best management practices	ⓘ	http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/aesa5826 http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/wqe11318 http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/crop12137 http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/epw11955#publications
1.8	Facilitate upgrades to drinking water facilities and wastewater facilities to meet standards and, where possible, integrate with regional systems.	➡	Develop a management framework to facilitate the safe use of reclaimed water for domestic applications in Alberta	ⓘ	http://www.municipalaffairs.gov.ab.ca/1171.cfm http://www.transportation.alberta.ca/2719.htm
1.9	Facilitate upgrades to drinking water quality in provincial parks and recreation areas to meet drinking water standards and, where possible, integrate with regional systems.			ⓘ	

Planning stage

Stakeholder engagement stage

➡ Moving toward final approval

ⓘ Ongoing development or implementation through various Government of Alberta programs

✗ Not yet initiated due to dependency on short/medium term deliverable

✓ Completed

Short term actions by 2012

Medium-term Actions by 2015

Long-term Actions by 2019

water for life

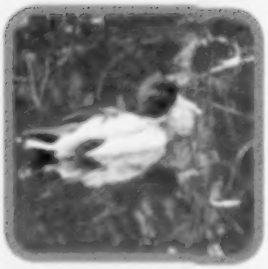
Potable Water for Tilley, Alberta (Action 1.5)

The town of Tilley, located in south eastern Alberta, found itself with an increasing population that exceeded the capacity of its water treatment facility sooner than the town had planned for. The 405 residents found themselves under a boil water advisory. The *Water for Life* strategy's goal of providing safe, secure drinking water for Albertans has prompted a number of new models for drinking water delivery. One of these is the hub and spoke model of water distribution, which proved to be a workable solution for Tilley.

Numerous villages and the city of Brooks united to create the Newell Regional Services Corporation regional water service. The central treatment facility is located in Brooks and smaller centres are served by a pipeline from the central facility. Water from the pipeline will flow into the Tilley storage reservoir and be pumped to distribution mains.

GOAL:
HEALTHY AQUATIC ECOSYSTEMS

Alberta's aquatic ecosystems are full of diversity. Aquatic ecosystems are the source of Alberta's water, and well-functioning aquatic ecosystems are required to maintain safe and stable drinking water supplies and support economic needs.



Healthy Aquatic Ecosystems

In many ways, a healthy aquatic ecosystem is the foundation of the *Water for Life* strategy. Aquatic ecosystems are key parts of the water cycle, playing a role in the capture and storage of water, filtering ground water, recharging aquifers, reducing the effects of both flooding and drought, and providing important fish and wildlife habitat. They are also an excellent barometer to assess the health of the environment. Aquatic ecosystems are complex and understanding them takes time. However, feedback received from stakeholders has indicated the importance of continuing efforts to further progress and accomplishments in this area.

The Alberta Water Council

The need to improve the understanding of aquatic ecosystem health was recognized as a major consideration in the renewal of the *Water for Life* strategy. As part of the overall strategy, the Alberta Water Council has created several project teams to assist and advise the Government of Alberta on efforts to further the healthy aquatic ecosystem component of the strategy. The Council's team created a definition for healthy aquatic ecosystems to provide a common reference for government, industry, agriculture groups, and watershed and stewardship organizations.

A healthy aquatic ecosystem is an aquatic environment that sustains its ecological structure, processes, functions, and resilience within its range of natural variability.

Alberta Water Council, *Healthy Aquatic Ecosystems: A Working Definition* December 2008
http://www.albertawatercouncil.ca/Portals/0/pdfs/HAE_Working_Definition.pdf

In addition, in March 2009, the Council's team released a report containing nine recommendations to guide the choosing of projects to best advance the Healthy Aquatic Ecosystems goal.

http://www.albertawatercouncil.ca/Portals/0/pdfs/HAE_Recommendation_Report.pdf

Key Action 2.1 Finalize and implement a new wetland policy for Alberta:

Wetlands fall under the *Water Act*. Within that Act, an interim policy, *Wetland Management in the Settled Area of Alberta*, provides direction on how to manage and protect wetlands. The interim policy dates back to 1993 and focuses on settled lands, known as the White Area. It does not address crown land – also known as the Green Area. Alberta's wetlands are highly diverse in form, function, use, and distribution across the province. To manage this diversity, a new provincial policy intent has been proposed.

The proposed policy intent seeks to conserve, restore, protect, and manage Alberta's wetlands to sustain the benefits they provide to the environment, society, and the economy. The policy intent seeks to categorize wetlands into several management categories, according to their relative wetland function. Relative wetland function is determined on the basis of the functions and benefits provided by a wetland, relative to others in the same area. This is intended to allow flexibility to address unique regional issues.

The Government of Alberta continues to work with stakeholders that would be affected by a provincial wetland policy to advance its development.

Complete a Wetlands Inventory

Approximately 21 per cent of Alberta is covered by wetlands. Most of these are located in the central and north portion of the province. Traditionally, wetlands were viewed as wasted land; however, they are now recognized as playing a critical role in sustaining the aquatic environment.

A variety of wetland inventories have been completed in Alberta (see map). The drained wetland inventory uses air photo imagery to compare historical wetland locations to current wetland status and abundance. This inventory is undertaken primarily in the white zone (settled and agricultural areas) in the southern part of the province identifies wetland locations and potential areas for restoration activities. SPOT imagery has also been used to map wetlands in southern Alberta.

In the green zone, which falls primarily in the boreal, north part of the province, wetland inventory is focused on classifying the different types of wetlands. This inventory identifies wetlands to a minimum of five different types based on the Canadian Wetland Classification System including bog, fen, swamp, marsh, and shallow open water wetlands. Alberta is also part of an initiative in the boreal plains, led by Ducks Unlimited Canada and including the four western provinces, to identify wetlands to an enhanced classification detail of up to nineteen wetland types. To date, over 27 million hectares in Alberta alone have been classified using the inventory.

In 2010, a large area was completed using the enhanced wetland classification inventory for the Upper Athabasca and Upper Peace areas totalling over 7.5 million hectares. Wetland inventory was also completed for the Industrial Heartland and Strathcona County area east of Edmonton.

Provincial wetland inventory information collected using various sensor and imagery sources.

Alberta North American Waterfowl Management Plan

An important partnership supports the *Water for Life* strategy to enhance the collection of information and knowledge to inventory and map Alberta's wetlands. The Alberta North American Waterfowl Management Plan has been a key partner in developing a provincial wetland inventory, which provides wetland information to numerous organizations and is important as a decision support tool for the government of Alberta. An example of the drained wetland inventory mapping is the Vermilion River watershed in east central Alberta. Information about the Vermilion River survey is available at:

http://arcims.ducks.ca/public/Vermilion/viewer.htm

Applying Wetlands Research - Alberta Innovates Energy and Environment Solutions

Alberta Innovates Energy and Environment Solutions is a leader and facilitator of knowledge and research for water policy, practices, and management for the province of Alberta. It also coordinates knowledge and research activities related to fulfilling the three goals of *Water for Life*.

The institute has two projects under way that relate to the healthy aquatic ecosystems goal: the wetland research project focusing on wetland health and policy needs is currently collecting information and development wetland health indicators in the Beaverhill sub basin east of Edmonton. The second project involves collaborative research to develop instream flow needs tools and increase understanding of flow need requirements of Alberta waterways.

http://www.albertainnovates.ca/energy/introduction/water-resources

Key Action 2.2 Protect Alberta's critical aquatic ecosystems and develop a provincial action plan to improve the health of significantly impacted aquatic ecosystems.

Provincial Ecological Aquatic Criteria for Health Project Team

In August 2009, the Alberta Water Council initiated the Provincial Ecological Aquatic Criteria for Health Project Team. The objective of this team was to develop a suite of criteria to identify areas significant to the maintenance of aquatic ecosystem health.

The final report outlines seven criteria that can be used to identify areas that are significant to the maintenance of aquatic ecosystem health. This work is a first concrete step towards fully identifying the aquatic ecosystem criteria that can serve to inform the overall assessment and preliminary determination of aquatic ecosystem significance in the province.

http://www.albertawatercouncil.ca/Projects/ProvincialEcologicalAquaticCriteriaforHealth/tabid/117/Default.aspx

Key Action 2.3 Establish science-based methods and tools to determine ecological requirements for a healthy aquatic environment:

A Desktop Method for Establishing Environmental Flows in Alberta Rivers and Streams

Flowing waters in Alberta provide for a rich diversity of plant and animal life. Sufficient water of good quality is among the most essential requirements for sustaining fish and other aquatic life within Alberta's rivers and streams. Alberta Environment and Water and Alberta Sustainable Resource Development have developed a desktop method to support the goal of the *Water for Life* strategy and the key action to establish science-based methods for determining the ecological requirements for a healthy aquatic environment.

The desktop method will help to estimate the water flows needed to maintain the ecological health of rivers, streams, and other flowing water bodies where no site-specific data is available.

http://www.waterforlife.alberta.ca/01118.html

Key Action 2.4 Establish the Bow Habitat Station as a centre of aquatic ecosystem learning that focuses on public outreach and education:

Bow Habitat Station

The Bow Habitat Station, located in Calgary, provides hands-on learning, interactive displays, and programming that aligns with the Alberta Education science curriculum. Four galleries educate visitors on fish species and their lifecycles, water use and its cycle, and the variety of aquatic habitats throughout the province. There is also a multi-media theatre.

The Bow Habitat Station includes the Sam Livingston Fish hatchery, which is an important part of the fisheries management program in Alberta. The hatchery raises 1.7 to 2 million fish annually for stocking the province's waters. The Pearce Estate Park Interpretive Wetland is also a part of the station. The interpretive wetland showcases aquatic habitats found in Alberta and the wildlife and plant species that call them home. Also a part of the wetland, the BP Coldwater Stream represents a stream course and features an interpretive trail with signs describing aquatic and riparian habitats along its length.

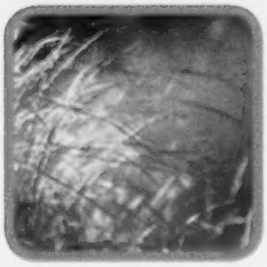
http://www.srd.alberta.ca/bhs

Key Action 2.5 Set Water Conservation Objectives on all major basins:

A water conservation objective is the amount of water necessary for: protection of a natural water body or its aquatic environment; protection of tourism, recreational, transportation or waste assimilation uses of water; or management of fish and wildlife. It may apply to a natural or human-made water body.

Water conservation objectives contain a greater degree of social considerations in the determinations than do instream objectives or minimum flows. Water conservation objectives can be established within a Water Management Plan, approved or not, or outside of a plan and are established legislatively in the *Water Act*. Water Management Plans have been established for the South Saskatchewan, Lesser Slave and the Cold Lake-Beaver River Basins.

The Government of Alberta is also undertaking planning processes to establish water conservation objectives in other areas, including the Lower Athabasca, the Industrial Heartland region, and the Battle River. The Milk River Watershed Council Canada is working on a recommendation for water conservation objectives for the Alberta portion of the Milk River.



	Key Actions		Deliverables	Status	Information
2.1	Finalize and implement a new wetland policy for Alberta	➡	Complete an Alberta wetlands inventory (medium-term)	ⓘ	http://arcntsrv.ducks.ca/public/vermilion/viewer.htm http://www.ducks.ca/conserve/programs/boreal/projects.html
		➡	Apply research and knowledge to develop and model indicators of wetland health (medium-term)	ⓘ	
2.2	Protect Alberta's critical aquatic ecosystems and develop a provincial action plan to improve the health of significantly impacted aquatic ecosystems	➡	Define criteria and identify critical and significantly impacted aquatic ecosystems	ⓘ	http://www.albertawatercouncil.ca/Projects/ProvincialEcologicalAquaticCriteriaforHealth/tabid/117/Default.aspx
		➡	Maintain or improve the health of critical and impacted aquatic ecosystems through legislation, watershed and regional planning, and conservation organizations	ⓘ	
		➡	Monitor, report, and adjust where necessary to ensure the health of aquatic ecosystems are maintained or improved	X	
2.3	Establish science-based methods and tools to determine ecological requirements for a healthy aquatic environment	➡	Complete instream flow needs methods and tools including a desktop approach (short-term)	✓	http://www.waterforlife.alberta.ca/01118.html
		➡	Complete the Alberta fish community index for assessing watershed health (short-term)	ⓘ	
2.4	Establish the Bow Habitat Station as a centre of aquatic ecosystem learning that focuses on public outreach and education			✓	http://www.srd.alberta.ca/bhs The Bow Habitat Station was reopened on October 2, 2009.
2.5	Set Water Conservation Objectives on all major basins			⇆	

⇆ Planning stage
Stakeholder engagement stage
➡ Moving toward final approval
ⓘ Ongoing development or implementation through various Government of Alberta programs
X Not yet initiated due to dependency on short/medium term deliverable
✓ Completed

Short term actions by 2012
Medium-term Actions by 2015
Long-term Actions by 2019

water for life

Protecting water quality - Alberta bans weed and feed lawn care products (Action 2.2)

Effective January 1, 2010, the use of weed and feed type domestic lawn care products are banned in Alberta. The Alberta government instituted the ban to reduce the application of the chemical 2,4-D, which has been detected in more than 90 per cent of surface water samples downstream from urban areas at concentrations up to ten times higher than rural sampling locations. Although the average 2,4-D amount in rivers and lakes is still less than federal guideline thresholds, by acting proactively, Alberta is making an effort to eliminate unwanted substances from water.

Chemical 2,4-D kills only growing weeds. It cannot prevent their re-appearance. Widespread application results in excess product being washed off during rain or through sprinkler use.

GOAL:
RELIABLE, QUALITY WATER SUPPLIES FOR A SUSTAINABLE ECONOMY

Water management must be relevant and responsive. Alberta's recent economic and population growth has increased the pressure on water resources and the environment. Water management, both surface and groundwater, must also take into account transfer and use systems. The challenge is how we balance our water needs with the needs of the environment. So, how do Albertans value water?

Reliable, quality water supplies for a sustainable economy

Water powers the economy in many ways. A realistic water management plan must balance the economic need for water with the social and environmental needs. It is not an easy task.

Key Action 3.1 Develop and implement a viable governance system that supports sustainable management of water:

Water allocation management system review

In 2009, the Minister of Environment asked three groups to investigate how to improve and enhance our water allocation system. The way water is allocated in the province can help to mitigate the effects of current and future pressures on water supply and aquatic ecosystems.

The Minister's Advisory Group review resulted in *Recommendations for Improving Alberta's Water Management and Allocation* and the Alberta Water Council prepared *Recommendations for Improving Alberta's Water Allocation Transfer System* – both reports focusing on the Alberta context. The Alberta Water Research Institute, now Alberta Innovates – Energy and Environment Solutions, prepared *Towards Sustainability: Phase 1 – Ideas and Opportunities for Improving Water Allocation and Management in Alberta*, which investigated water allocation policies and practices in the western U.S. and Australia where the water challenges are similar to Alberta's.

Alberta Environment and Water has built upon the foundational work of these reviews to consider changes to policy that takes into account pressures like water scarcity, climate change, drought, and Alberta's growing population. Increasing economic activity also requires policy to address growth pressures, assure fair access to water and promote wise use, and protect aquatic environments.

Stakeholder and public engagement is planned to consider policy for a management system that takes into account pressures like water scarcity, climate change, drought, and Alberta's growing population. Increasing economic activity also requires policy to address growth pressures, assure fair access to water and promote wise use, and protect aquatic environments.

http://www.waterforlife.alberta.ca/02643.html

Key Action 3.2 Address the water management and policy risks associated with a changing future water supply resulting from the impacts of changing climate regimes.

***Water for Life* and climate change**

Alberta's 2008 Climate Change Strategy identifies the importance of anticipating and planning ahead to reduce vulnerability to the impact of climate change. Research to identify the risks and opportunities and the best strategies to adapt to climate change is underway in Alberta and other prairie provinces.

Alberta Environment and Water has established a work plan for climate change adaptation as it affects water supply. Highlights from the work plan include:

- Variability analysis of the occurrence and frequency of extremes in water supply within our current historical record, including using tree-ring analysis to build knowledge of long-term variability;
- Hydro-climate modeling of changes to average water supply conditions, using information scaled down from Global Climate Models;
- Putting the two above together to build knowledge of the possible variability in natural water supply cycles, under climate change scenarios;
- Using changing water supply estimates and future water demand scenarios to build knowledge of key areas where there may be water supply deficits that need to be addressed; and
- Pilot an investigation of socio-economic responses to water supply deficits.

Work has progressed in several basins in the first three items. Hydro-climate modeling and variability analysis has been completed, and then was coupled together to form a full picture of future variability scenarios for the following basins:

- Athabasca Basin "Upper" and "Lower" portions.
- Beaver River Basin.
- South Saskatchewan Basin (the South Saskatchewan Basin is made up of sub basins: the Bow River Basin, the Oldman River Basin, and the South Saskatchewan Sub-basin).

Key Action 3.3 Institute mandatory water use public reporting for water licenses:

Alberta Water Use Reporting System

Alberta Environment and Water has developed the Alberta Water Use Reporting System to allow licensed water users to report their water diversions online. Licensees enter the data on a daily, monthly or annual basis depending on the reporting requirement of their licence. Following recommendations made by the Alberta Water Council and the seven major water use sectors, all new licenses issued have the mandatory reporting conditions to report water use via the water use reporting system. Mandatory reporting helps to establish benchmarks for the Conservation, Efficiency, and Productivity plans each sector is committed to develop and implement under *Water for Life*.

Work is also continuing on an online/web project to allow public access to the water use data collected by the water use reporting system.

http://www.environment.alberta.ca/1286.html

Water Measurement Guidebook

Alberta Environment and Water has published a Water Measurement Guidebook to assist unmetered licence holders to more accurately measure their water diversions. While water meters are a preferred method of measuring water diversion because of their accuracy, the unmetered methods outlined in the guidebook help licence holders improve the consistency and accuracy of their water diversion measurement. Water use information can also be used to establish baseline numbers against which improvements in conservation, efficiency, and, productivity can be measured.

http://environment.alberta.ca/3579.html
http://www.waterforlife.alberta.ca/02642.html

Key Action 3.4 Assess future water supply demands and management options within watershed management planning. Options could include conservation, storage (based on provincial inventory), and water allocation transfers.

Athabasca River Water Management Framework

As a management option for the lower Athabasca oilsands area, Alberta Environment and Water sets seasonally changing limits on how much water oil sands companies can remove from the Athabasca River as it flows north from Fort McMurray. These limits are described in Phase One of the framework, which has been in place and implemented since 2007. The framework limits are implemented through oilsands *Water Act* licences as well as through an agreement between companies that is updated each year prior to the lower flow, fall and winter, season.

Phase One of the framework committed to further refinement in Phase Two. Further work was done by the Phase 2 Framework Committee of Cumulative Environmental Management Association. This committee built knowledge by first compiling oilsands water demands, and then by running various scenarios for seasonal timing and amount of water withdrawal limitations. Recommendations of this committee were provided to government in February 2010. At this time the Regional Advisory Council for the Lower Athabasca regional plan area was developing recommendations for government on the regional plan and government began to work on how this type of framework might fit into a regional plan. A commitment to update the framework within the context of the Lower Athabasca Regional Plan is contained within the draft plan.

http://environment.alberta.ca/1546.html

South Saskatchewan River Basin Water Management Plan

In order to enable water allocation transfers and associated water conservation holdbacks, an "Approved Water Management Plan" must be authorized by the Lieutenant Governor in Council.

The South Saskatchewan River Basin Water Management Plan recognizes and accepts that limits for water allocations have been reached or exceeded in the Bow, Oldman, and South Saskatchewan River sub-basins. As such, Alberta Environment and Water no longer accepts applications for new water allocations in these sub-basins. The Director is authorized to consider applications for transfers of water allocations and is authorized to withhold up to ten per cent of the volume of water being transferred, if it is considered to be in the public interest to protect the aquatic environment or to implement a water conservation objective. Under this plan, water conservation objectives have been set at forty five per cent of the natural rate of flow, or the existing instream objective plus ten per cent, whichever is greater at any point in time.

	Key Actions		Deliverables	Status	Information
3.1	**Develop and implement a viable governance system that supports sustainable management of water**	→	Review and renew Alberta's current water allocation system to meet future needs including the environment and other protected uses	ⓘ	**http://www.waterforlife.alberta.ca/02643.html**
		→	• Develop and implement an enhanced water rights transfer system that supports sustainable economic development	ⓘ	
		→	Develop a publicly-accessible, automated decision support system for temporary diversion licenses	ⓘ	
		→	• Investigate further support system applications for water approvals	✗	
3.2	**Address the water management and policy risks associated with a changing future water supply resulting from the impacts of changing climate regimes**	→	Develop future hydro-climate scenarios for major watersheds	ⓘ	
		→	Develop strategies to deal with the management of changing future water supplies through the provincial Climate Change Adaption Strategy, implementation of the Land-use Framework and watershed planning	✗	
3.3	**Institute mandatory water use public reporting for water licenses**	→	Implement a water measurement pilot project using the water measurement guide	ⓘ	**http://environment.alberta.ca/documents/WUR-Water-Measurement-Guidebook.pdf**
		→	Amend water reporting conditions of existing water licenses	✓	**http://www.environment.alberta.ca/1286.html**
		→	Implement electronic public reporting	ⓘ	
3.4	**Assess future water supply demands and management options within watershed management planning. Options could include conservation, storage (based on provincial inventory), and water allocation transfers**			ⓘ	**http://environment.alberta.ca/1546.html**

Planning stage

Stakeholder engagement stage

→ Moving toward final approval

ⓘ Ongoing development or implementation through various Government of Alberta programs

✗ Not yet initiated due to dependency on short/medium term deliverable

✓ Completed

Short term actions by 2012

Medium-term Actions by 2015

Long-term Actions by 2019

water for life

Water: How Alberta Can Do More with Less (Action 3.1)

In March 2009, the Alberta Water Research Institute, now Alberta Innovates – Energy and Environment Solutions, partnered with the Alberta Water Council to hold a symposium that invited international experts to discuss water markets being used in their states and countries. The consensus of opinion was although water markets represent an efficient mechanism for reallocating water to uses with higher economic values, governments must oversee markets to ensure sufficient water is retained for environmental purposes and that water transfers do not adversely affect third parties or other water users.

There is evidence that water transfers encourage innovation and increase water use efficiency. The key challenge is to find the balance between protecting the public resource and making it relatively easy for water licences to be transferred among buyers and sellers.

KEY DIRECTION:
KNOWLEDGE AND RESEARCH

Investment in knowledge and research is the basis for informed decision making. It encourages increased community collaboration through sharing and creates empowered partnerships.

Knowledge and Research

Water management issues are complex and accessible knowledge is necessary for making informed decisions. Under *Water for Life*, knowledge and research ranges from providing scientific solutions to large and complicated issues, to helping children in a classroom understand how their individual acts can effect the environment around them.

Key Direction 4.1 Develop and implement an education framework to support *Water for Life*:

Water Education Framework

An assessment of water education priorities, challenges, and opportunities was conducted by *Inside Education* in 2010. The assessment, along with other information sources, was intended to inform the development of a water education framework. In light of Alberta Environment and Water's organizational redesign and shift to a cumulative effects management system, the direction has changed. Water education priorities will be integrated into an inclusive environmental education framework that will include air, land, water, and waste. In 2011-2012 Alberta Environment and Water will initiate a process to develop this framework.

Inside Education is a non-profit registered charity that provides natural resources and environment education focused on forests, water, energy, and related topics. For 24 years, they have been developing quality, no-cost to low-cost education programming for Alberta's students, teachers and community groups with the help of our partners in government, industry and the conservation sector.

Student and Teacher Resources
In support of the education element of *Water for Life*, a number of resources were developed including fact sheets for groundwater and wetlands. A multi-media presentation *Hidden Water* has also been developed and is linked to the Alberta curriculum for grades eight and nine.

The *One Simple Act* School Toolkit provides grades one to six teachers with the tools and resources to have students personally commit to one of ten simple acts that protect the environment. This toolkit is flexible, offering a collection of tools that teachers can draw on based on students' needs. The Teacher's Guide contains an outline of the process, curriculum connections, and tools to use throughout the One Simple Act for Schools program. A series of introductory lesson plans provide the background knowledge on environmental issues related to human energy and water use, and our waste production. They are designed to be an introduction to the Simple Acts and help to build the connection between environmental issues and human actions. There are also a number of downloadable resources as well.

http://www.onesimpleact.alberta.ca/get-involved/schools.asp

Facts About Water booklet
Alberta Environment and Water developed the Facts About Water booklet to inform Albertans about the province's water, and some of the current challenges facing water resources. Originally published in 2002, the booklet was extensively revised to include information on water monitoring, water allocation, and water management. A section on water partnerships was also added. Maps, facts, and data have also been updated.

http://environment.gov.ab.ca/info/posting.asp?assetId=6364&searchtype=asset&txtsearch=facts_about_water

Key Direction 4.2 Enhance the water information centre for accessible web-based public information:

Flood Risk Mapping
In 2009, under the Flood Hazard Identification Program, studies were completed for the communities of Thorsby and Rycroft consisting of a report and a set of maps describing the flood hazard. In mid-December 2009, a new website was created to display information from the flood hazard information studies.

http://environment.alberta.ca/1291.html

In 2011, the Cypress County Flood Event Documentation and Flood Hazard Identification Project was initiated. A multi-year project is also underway to improve the databases that provide much of Alberta Environment and Water's water data. While this work is ongoing in the ministry, changes to the public website display and data are not scheduled until 2011.

Alberta Water Well Information Database
A significant enhancement to Alberta Environment and Water's water well database was made in 2010. Formerly known as the Groundwater Information Centre, the database has been re-named to the Alberta Water Well Information Database. The enhancements have significantly improved access to information from this important database.

http://environment.alberta.ca/1295.html

Key Direction 4.3 Develop qualified water expertise and apply research findings:

Alberta Innovates Energy and Environment Solutions

Alberta Innovates Energy and Environment Solutions, (formerly the Alberta Water Research Institute) was established in spring 2007 to coordinate world class and leading edge research to support Alberta's provincial water strategy, *Water for Life: A Strategy for Sustainability*. Administered through the Alberta Innovates – Energy and Environment Solutions, the Water Institute funds specific research initiatives in support of the *Water for Life* goals and key directions.

Currently the institute is supporting a number of research projects covering a variety of topics such as source water protection, wetland health, advancing in-stream flow assessment tools and policy, and accelerating the recovery of water from fine tailings ponds for recycling in oil sands processes.

Alberta Innovates Energy and Environment Solutions has also launched an executive education program to bring together global business leaders with some of the world's top researchers and experts on water management to share case studies and best practices, which in turn could lead to improved environmental management strategies and practices.

http://www.albertainnovates.ca/energy/introduction/water-resources

Key Direction 4.4 Enhance the provincial water monitoring and evaluation program to include information on wetlands, groundwater, aquatic health, water quality and quantity:

Towards a building a comprehensive system for Integrated Monitoring, Evaluation, and Reporting

The Integrated Monitoring, Evaluation, and Reporting Framework Project was initiated in 2009. The main purpose of this project was to provide a vision and path forward to support and enable sound monitoring and reporting systems. This system will provide reliable information to decision makers and the public. It must also address data and information needs of diverse partners and initiatives.

To build a comprehensive system, Government appointed a panel of experts who would be responsible for providing advice on the necessary requirements and components of a world-class environmental monitoring, evaluation and reporting system.

Recommendations from the Alberta Environmental Monitoring Panel regarding the design of Alberta's monitoring, evaluation and reporting system, will focus first on surface water quality in the oil sands area. The goal is to ensure the system is applicable to all environmental media (air, land, water and biodiversity) within Alberta. The panel will provide recommendations for a world-class monitoring, evaluation and reporting system, including:

- appropriate government and validation;
- credible data analysis from a science authority;
- transparent reporting; and
- a technically designed monitoring network.

Continuation and enhancement of key monitoring, evaluation, and reporting systems, such as those for water quality, quantity, and ecosystem health, will be required to support cumulative effects management and regional plans under the Land-Use Framework.

The following link provides an explanation of the Surface Water Quality program and includes reference to related monitoring, evaluation, and reporting work such as the Long-term River Network.

http://www.environment.alberta.ca/3223.html#3230

Groundwater Observation Well Network

The Groundwater Observation Well Network comprises over 250 monitoring wells spread across the province. Groundwater levels are monitored at about 200 of these wells on a continual basis. Groundwater quality monitoring for various parameters is carried out at 160 of these wells. Information collected from the network is evaluated and/or reported on the *Water for Life*, State of the Environment, and Groundwater Observation Well Network web pages.

http://www.waterforlife.alberta.ca/01369.html

Groundwater Inventory Program

In 2007 an ambitious program was launched to inventory groundwater resources in Alberta. The Provincial Groundwater Inventory Program is coordinated under a partnership between Alberta Environment and Water and the Alberta Geological Survey. The Edmonton-Calgary Corridor was selected as the initial pilot project due to significant growth and development in this area and the first phase will be completed by summer 2011. A key component of the program included airborne geophysical surveys to help identify and delineate important aquifers. Various mapping products and reports, including an educational atlas summarizing the results, will eventually be available on the Alberta Environment and Water website. The groundwater inventory program moved into Southern Alberta in 2011.

www.ags.gov.ab.ca/groundwater/groundwater.html

Groundwater Reports

Various groundwater reports are found on the *Water for Life* website, including an assessment of the potential for gas migration from coal bed methane development and results of the department's groundwater quality monitoring program.

http://www.waterforlife.alberta.ca/01371.html

	Key Actions		Deliverables	Status	Information
4.1	Develop and implement an education framework to support *Water for Life*	▸	Develop print and web-based public information resources on the following topics: watershed management, wetlands, groundwater, and water conservation	➡	http://environment.gov.ab.ca/info/library/6367.pdf http://environment.gov.ab.ca/info/library/8044.pdf http://environment.alberta.ca/documents/WUR_Water_Measurement_Guidebook.pdf
		▸	Develop and support teacher resources and programs on watershed management, wetlands, groundwater, and water conservation	ⓘ	http://www.onesimpleact.alberta.ca/get-involved/schools.asp
		▸	Support and facilitate partnerships on education programs related to watershed management, wetlands, groundwater, and water conservation	ⓘ	
4.2	Enhance the water information centre for accessible web-based public information (short-term)	▸	Establish a data management support and reporting system integrated with Land-use Framework and cumulative effects information systems	⇆	http://www.environment.alberta.ca/1286.html
		▸	Complete flood risk maps and warning systems for all communities where a flood risk exists	ⓘ	http://www.environment.alberta.ca/01260.html
4.3	Develop qualified water expertise and apply research findings (medium-term)	▸	Work with Alberta Water Research Institute (AWRI) to identify and resource key expertise in Alberta (e.g. Instream Flow Needs specialists, hydrologists)	ⓘ	http://www.albertainnovates.ca/energy/introduction/water-resources
		▸	Apply research findings from the AWRI and other research partners to support water management decision making	ⓘ	
4.4	Enhance the provincial water monitoring and evaluation program to include information on wetlands, groundwater, aquatic health, water quality, and quantity (long-term)	▸	Ensure aquatic health instream flow needs are complete for major basins	ⓘ	
		▸	Implement the system for monitoring, evaluation, and reporting on aquatic ecosystems	ⓘ	http://www.environment.alberta.ca/3223.html#3230
		▸	Complete mapping and modeling of Alberta's groundwater resources	ⓘ	http://www.ags.gov.ab.ca/groundwater/groundwater.html http://www.ags.gov.ab.ca/publications/abstracts/OFR_2009_02.html http://www.ags.gov.ab.ca/publications/abstracts/OFR_2009_17.html http://www.waterforlife.alberta.ca
		▸	Implement a long-term water quality and effluent monitoring and evaluation system	ⓘ	http://environment.alberta.ca/01256.html
		▸	Implement a long-term water supply monitoring and evaluation system	ⓘ	

⇆ Planning stage
➡ Moving toward final approval
ⓘ Ongoing development or implementation through various Government of Alberta programs
✗ Not yet initiated due to dependency on short/medium term deliverable
✓ Completed

Short term actions by 2012
Medium-term Actions by 2015
Long-term Actions by 2019

water for life

Wetlandsalberta.ca (Action 4.1)

Wetlandsalberta.ca is a website dedicated to providing timely and relevant information to help conserve and protect Alberta's wetlands, as both an environmental resource and as places to enjoy. It is a co-sponsored project that involves the Alberta branch of the North American Waterfowl Management Plan, Ducks Unlimited, and the Government of Alberta.

Besides providing information on wetlands and their role in the environment, the site also provides the people of Alberta with an opportunity to participate in preserving and studying wetlands. People are encouraged to assist biologists in monitoring and observing the health of wetlands by providing information such as spotting and reporting endangered leopard frogs and other wildlife. Information on how to connect with local watershed stewardship groups is also available.

Landowners are also encouraged to seek out information on the site to help preserve wetlands.The site also contains an area featuring educational programs and resources for teachers, parents, and students.

KEY DIRECTION:
PARTNERSHIPS

The protection and preservation of water is a shared responsibility. *Water for Life* partnerships are an important vehicle through which goals and key directions can be achieved. To be successful, partnerships require appropriate resources, information, and tools to fulfill their mandates.

Partnerships

Partnerships recognize that governments cannot, and indeed should not, do everything alone. Increasingly, Albertans have demonstrated that they want to play a larger role in developing policy and participating directly in protecting and preserving the environment.

Water for Life Partners

The *Water for Life* strategy depends on many types of partnerships to fulfill the various goals framed in its action plans and other documents. Inter-governmental partnerships include multiple provincial government departments and connect with federal departments as well. Through transboundary water agreements partners also include other provinces and territories, and international partners (for example, the state of Montana), that share water sources with Alberta.

The *Water for Life* strategy also recognizes three fundamental types of water partnerships: the Alberta Water Council (provincial scale), Watershed Planning and Advisory Councils (watershed scale), and watershed stewardship groups (local scale).

The Alberta Water Council is an independent organization that advises and provides recommendations to the provincial government and other sectors to achieve the outcomes of the *Water for Life* strategy. The Council has a number of project teams that support projects under the *Water for Life* strategy. Watershed Planning and Advisory Councils and Watershed Stewardship Groups work at the watershed and local levels and contribute to producing various reports and plans as part of their responsibilities as stewards of their watershed.

Key Direction 5.1 Continue to resource and support *Water for Life* partnerships:

Alberta Environment and Water continues to provide funding for core operations of the Alberta Water Council and the ten Watershed Planning and Advisory Councils. Many watershed stewardship groups receive funding through the Alberta Stewardship Network, to which Alberta Environment and Water also provides significant funding.

In addition to supporting their core operations, Alberta Environment and Water provides funding for specific projects undertaken by these partnerships. Alberta Environment and Water staff are fully engaged in many of these projects and provide considerable information and expertise. Examples include:

- Lesser Slave Watershed Council – development of a watershed management report;
- Beaver River Watershed Alliance – a project to assess the health of the aquatic ecosystem in the Beaver River and its main tributaries;
- North Saskatchewan Watershed Alliance – an economics study including the assessment of economic goods and services within the watershed; and
- Milk River Watershed Council Canada – providing recommendations to government on sharing transboundary waters for the Montana-Alberta Water Management Initiative.

Key Direction 5.2 Integrate watershed management with the Government of Alberta's Land-use Framework regional planning and cumulative effects management system:

Water for Life and the Land-use Framework

Economic growth has historically been viewed as positive. But too much too fast has consequences that strain the environmental landscape and affect the quality of life for Albertans. Just as growth has created challenges for water use, it has also created similar challenges for land use. Impacts to one inevitably reverberate in the other.

The *Water for Life* strategy was one of the first major government strategies to look at not only water, but the elements that affect it by incorporating placed-based outcomes for watershed management. Concerns regarding water quality, by their nature, bring in a land component. Run-off, riparian health, and other land-based factors ultimately affect water. Because of its ambition and the broad encompassing factors it sought to bring together around water, *Water for Life* became a model for the strategies that followed it.

The Land use Framework addresses the impacts of development on land, air, water, and biodiversity at a regional level. Both the Land use Framework and the movement towards a cumulative effects management system broaden the scope and scale of initiatives and build upon information that is provided by *Water for Life* actions. Through actions, such as the development of watershed management plans, *Water for Life* helps shape clearer pictures of social, economic, and environmental impacts to river basins, wildlife, and riparian areas, all of which must be considered when building cumulative effects based outcomes for regions.

https://www.landuse.alberta.ca/Pages/default.aspx

Key Direction 5.3 Establish Watershed Planning and Advisory Councils for Athabasca and Peace watersheds:

Establishment of the Athabasca Watershed Council

The Government of Alberta has approved the establishment of the Athabasca Watershed Council, fulfilling one of the key actions listed in the *Water for Life* action plan (2008). The Council includes environmental groups, aboriginal people, municipality representatives, and members from the forestry, oil sands, and agricultural sectors. One of the first tasks for the Council is to undertake a State of the Watershed Report, to be followed by a Watershed Management Plan. This watershed faces its share of challenges, including maintaining water quality and monitoring water levels in the Athabasca River and its tributaries.

The Athabasca River is 1,538 kilometres long and like most Alberta rivers it continues beyond the province's borders. The watershed drains an area approximately 269,000 square kilometres in Alberta, Saskatchewan, and the North West Territories. Alberta Watershed Planning and Advisory Councils all share a special responsibility to preserve and protect their water resources not only for Albertans, but also to help ensure appropriate quality and quantity of water leaves the province for use further down stream.

http://www.waterforlife.alberta.ca/01261.html

Key Direction 5.4 Develop watershed management plans for the Milk, Oldman, South Saskatchewan, Bow, Red Deer, North Saskatchewan, Battle, Cold Lake-Beaver, and Lesser Slave Lake watersheds:

Key Direction 5.5 Complete and implement watershed management plans for all major watersheds:

State of the Watershed Reports

A State of the Watershed report brings together existing information about the watershed, leading to conclusions about the current environmental conditions. It typically describes water quality, river flows, lake levels, major sources of pollution and other activities that affect water quality. Environmental indicators are used to show historical trends in important parameters.

Watershed Planning and Advisory Councils that have completed their State of the Watershed Report include: Red Deer River Watershed Alliance, Bow River Basin Council, Milk River Watershed Council (Canada), Oldman Watershed Council, Southeast Alberta Watershed Alliance, and North Saskatchewan Watershed Alliance. The remaining Watershed Planning and Advisory Councils continue to work on their reports.

Watershed Management Plans

A Watershed Management Plan identifies important issues facing the watershed and recommends solutions that have the support of the participating stakeholders. The plan can deal with water supply or water quality issues and more broadly with issues related to land based activities affecting the aquatic ecosystems. It is used as a guide for decision making in the watershed.

Watershed Planning and Advisory Councils have taken a phased approach to address priority issues within their watersheds. Watershed Planning and Advisory Councils Watershed Planning and Advisory Councils have completed the initial phase of their management plans include Lesser Slave Lake Watershed Council and the Bow River Basin Council.

WATERSHED STEWARDSHIP GROUP ACTIVITIES

The following are a selection of some of the more than 140 watershed stewardship groups and the activities they have undertaken over the past two years. For more information about watershed stewardship groups and their projects please go to the Alberta Stewardship Network program at http://www.landstewardship.org/ASN/ or the Watershed Stewardship Grant program website at http://www.landstewardship.org/watershed-stewardship-grant-program/

Lac La Nonne Watershed Stewardship Society (Athabasca Watershed): The Lac La Nonne Watershed Stewardship Society organized a wetland education event with 50 grade five and six students from the Rich Valley and Dustable Schools to gain awareness and knowledge of riparian areas, ecology, and characteristics of the water cycle of the watershed and lakes. They also held a conference, "Lakes: The Naked Truth", which had presenters from local watershed groups, as well as field experts. The group also participated in the Edmonton Outdoor Show, showcasing lake stewardship to over 500 participants.

Friends of Little Beaver Lake Society (Battle River Watershed): The Alberta Stewardship Network Grant supported a riparian assessment of Beaver Lake by Cows and Fish to establish a baseline to plan future projects necessary for improving the lake and riparian health, as well as wildlife populations. Through an information session the Society engaged landowners in a discussion about the riparian assessment and what can be done on a small scale by landowners, but have a large cumulative effect on improving the habitat. The group also designed and installed an interpretive sign near the lake to further educate people and bring awareness to the importance of the lake, its wildlife, and healthy watersheds.

Moose Lake Watershed Society (Beaver River watershed): One of the Moose Lake Watershed Society's main goals is to increase public awareness of and engagement in land stewardship activities. They have achieved substantial gains through a highly successful elementary school invasive vegetation program, numerous local news publications, and information evenings. The group is pleased at how this project has helped build and foster the working relationships among many organizations and the local community.

Nose Creek Watershed Partnership (Bow River sub-basin): The Nose Creek Watershed Partnership is a very active group committed to the protection of Nose Creek. This group is well respected by the stewardship community and has gained valuable partnerships with major corporations. One project saw the removal of over 2,500 pounds of noxious weeds and 1,000 pounds of garbage, as well as the planting of 1,000 native trees and shrubs along the riparian area of Nose Creek. Volunteers also worked to protect 1,700 trees from beaver activity along the Bow River riparian south of Calgary. Media coverage of these events doubled volunteer participation and allowed the group to expand locations of their stewardship activities. The group anticipates even greater numbers of volunteers working on stewardship projects in the future.

High Prairie Riparian Action Team (Lesser Slave River sub-basin): The High Prairie Riparian Action Team is comprised of a number of different stakeholders that have pooled resources and leveraged funds to achieve success in watershed protection and enhancement. Their 2009 project saw them conduct three Riparian Health Assessments; two were revisits and one was a new site. The two revisit sites showed significant improvement of the riparian due to their off-site watering and fencing projects. This information is crucial to provide demonstrations to the public and to make recommendations on future project areas. Other landholders have made similar changes to their holdings based on the information and success displayed through this group's initiatives.

Milk River Ranchers Association (Milk River Watershed): The local community took it upon themselves to reach out and appeal to recreational users of the Milk River to better understand and respect the local watershed. The project involved the design, production, and installation of signs along the river providing information for recreational navigation and stewardship.

Wizard Lake Watershed and Lake Stewardship Association (North Saskatchewan River Watershed): The Wizard Lake Watershed and Lake Stewardship Association received the 2010 ASN Grassroots Award for Environmental Stewardship in the group category for their continued efforts. This ambitious group has hosted an awareness day, an open house, a strategic planning retreat for their board, and the very popular annual fundraiser the "WizSpiel". The group bolstered community awareness and knowledge through their community newsletter, improvements to their bulletin board network, signage, and capacity building opportunities for local watershed leaders. A major event for this group was the shoreline clean-up. The group has also engaged in significant watershed research to create an ongoing State of the Watershed Report and Area Structure Plan, with efforts to influence the County of Leduc in issues affecting the long-term sustainability of Wizard Lake.

Lyndon Creek Conservation Group (Oldman River sub-basin): The Lyndon Creek Conservation Group purchased two hounds tongue and five leafy spurge biological release control agents. The hope is that this project will help to minimize the amount of chemical herbicides applied. In combination with the insect release program, this group also hosted a tour of the Lyndon Creek Watershed with over 50 participants. The tour helped to show what the agents can do as well as brought awareness to specific invasive species and problems that can arise.

Heartland River Watershed Authority Committee (Peace River Watershed): The committee was able to use their watershed management plan to provide direction to the municipal planning committee for a Municipal Development Plan. Ongoing water sampling is expected to provide proof of improvements to the Heart River water quality. Brochures, signs, tours, and restoration efforts have encouraged local landowners to take advantage of riparian restoration programs and to change their management practices.

Friends of the Little Red Deer River Society (Red Deer River sub-basin): The Friends of the Little Red Deer River Society have created a partnership with Red Deer County to promote awareness and implement preventative stewardship practices among local landowners. This project consisted of water sampling along 150 km stretch of the Red Deer River and its tributaries. Since this group and the county helped support changes in agricultural practices by local landowners, such as off-site watering systems and riparian fencing, the water quality has improved. Testing water quality has given this group the ability to locate areas of concern, quantify conservation efforts of agricultural producers, and inform local communities about what is happening along the Little Red Deer River waterways.

Society of Grassland Naturalists (South Saskatchewan River Watershed): The society brings attention to the types, variety, and importance of wetlands within the urban area of Medicine Hat. They recruited and trained volunteers to monitor and observe various sites and documented characteristics, including amphibian, wildlife, and vegetative presence. Building off their learnings the group has created a teacher resource kit and hosts public wetland hikes, amphibian calling workshops, and a special teacher reception.

Key Direction 5.6 Complete transboundary bilateral agreements with neighbouring jurisdictions:

Transboundary water policy and partners

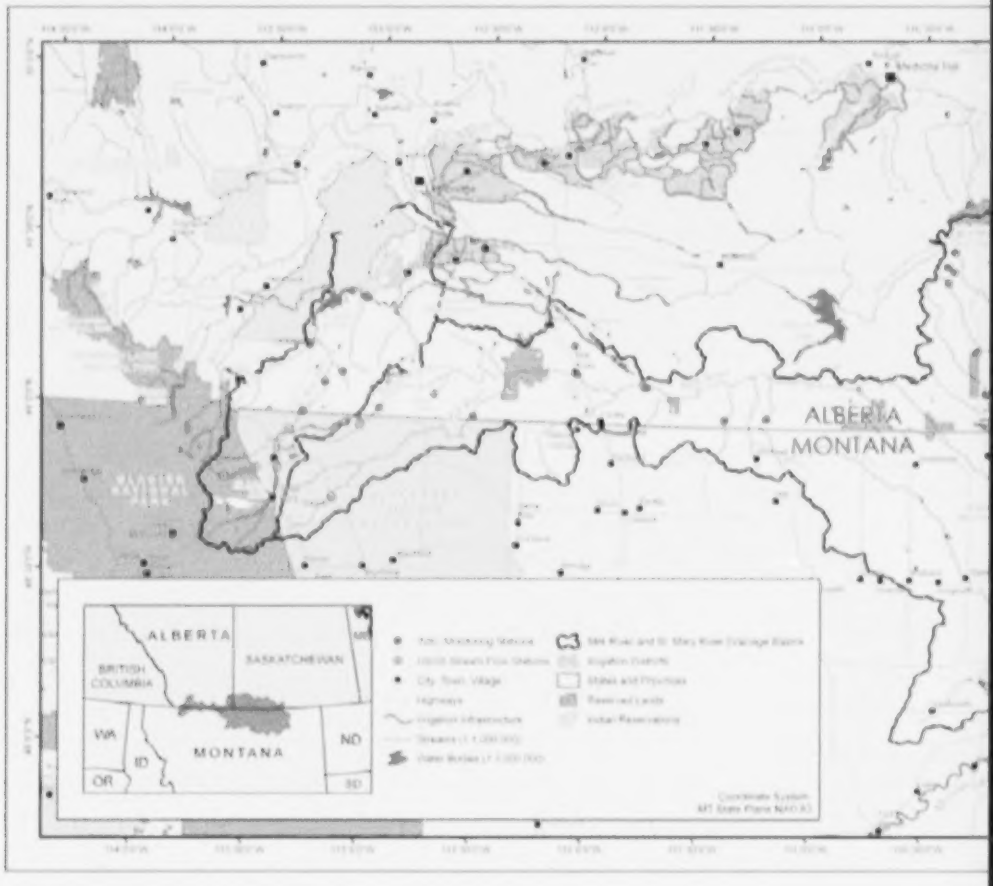
Alberta rivers cross national and international borders. Alberta works with it neighbours to manage its water resources to meet its apportionment obligations and receive its entitlements. Part of this work involves participating on various boards to implement the agreements, and to ensure clear, timely communications among the jurisdictions involved.

http://www.waterforlife.alberta.ca/03328.html

The Prairie Provinces Water Board (Alberta, Saskatchewan, Manitoba and two federal government departments: Environment Canada, and Agriculture and Agri-Food Canada)

Current important Board initiatives include:

- Assessing the resiliency of the Master Agreement on Apportionment to climate change.
- Working to obtain consensus on updated water quality objectives.
- Developing a conceptual framework for transboundary groundwater management.



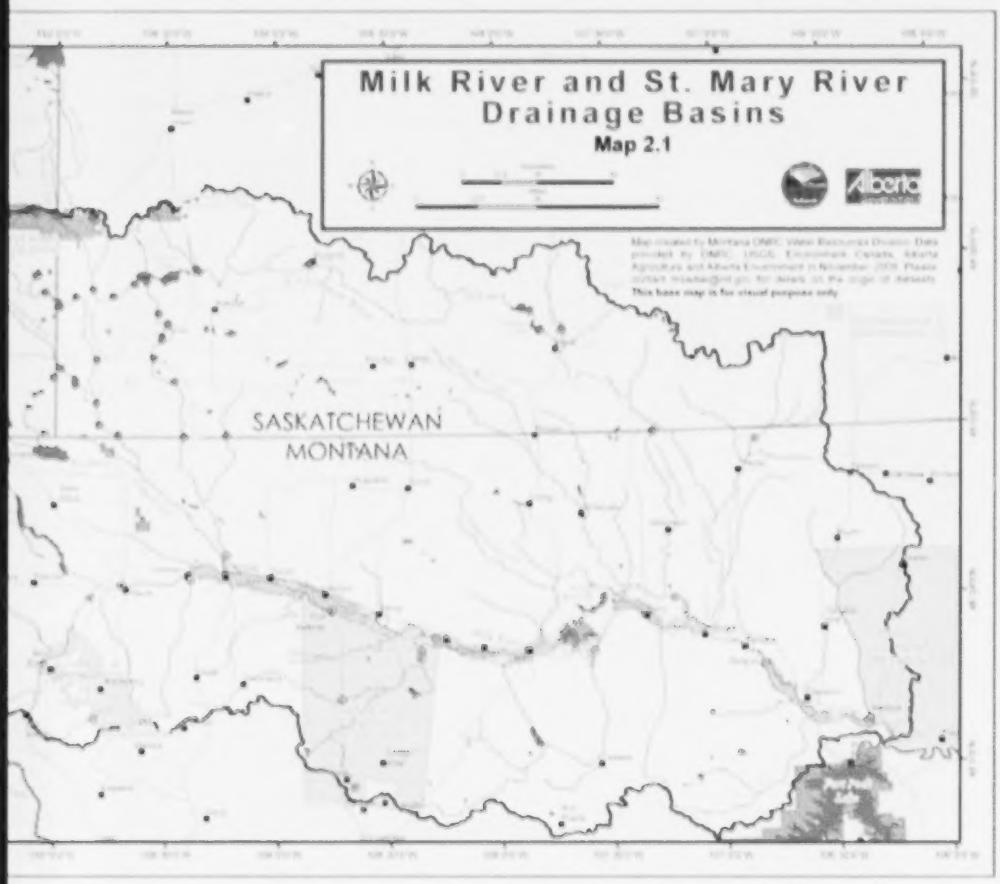
Mackenzie River Basin Board (British Columbia, Alberta, Saskatchewan, Northwest Territories, Yukon, and the federal government departments: Environment Canada, Aboriginal Affairs and Northern Affairs Canada, and Health Canada)

- The Board is finalizing its second State of the Aquatic Ecosystem Report and plans to submit it to the jurisdictions' ministers in 2011.
- A joint work plan among the provinces and territories has been approved. It outlines the timeline needed to develop the three ilateral agreements in a coordinated fashion.
- The Project Description for BC Hydro's Site C hydro development on the Peace River has been submitted to the BC and federal government agencies. The Environmental Assessment of this project will commence in the fall of 2011.

Montana/Alberta St. Mary and Milk Rivers Water Management Initiative (Canada - Alberta and United States – Montana)

The purpose of the initiative is to explore and evaluate options for improving Alberta's and Montana's access to the shared waters of the St. Mary and Milk rivers.

- Over 100 water management options have been modelled, including options that could be implemented through administrative procedures, and those requiring construction or modifications to infrastructure.
- Both jurisdictions are evaluating the potential impact of various options.
- Joint recommendations to the Premier of Alberta and the Governor of Montana are planned to be made in 2012.



	Key Actions		Deliverables	Status	Information
5.1	Continue to resource and support *Water for Life* partnerships	➡	Work with partners to develop a sustainable funding approach	ⓘ	
		➡	Establish regional cross-ministry support teams for watershed and regional planning	ⓘ	https://landuse.alberta.ca/Pages/default.aspx
5.2	Integrate watershed management with the Government of Alberta's Land-use Framework regional planning and cumulative effects management system	➡	Develop a watershed management planning framework and a guidebook for implementation	ⓘ	http://environment.gov.ab.ca/info/library/6367.pdf http://www.albertawatercouncil.ca/Portals/0/pdfs/SharedGov%20-%20Watershed%20Management%20Plan%20FINAL.pdf
		➡	Review and update legislation as required	⇆	
		➡	Develop core indicators and reporting tools for watershed and regional planning	🧍🧍🧍	
5.3	Establish Watershed Planning and Advisory Councils for Athabasca and Peace watersheds			✓ Athabasca	http://www.waterforlife.alberta.ca/01261.html * The Mighty Peace Watershed Alliance was formed in Spring 2011, just after the end of the timeline covered by this report. It is not included for this reason.
5.4	Develop watershed management plans for the Milk, Oldman, South Saskatchewan, Bow, Red Deer, North Saskatchewan, Battle, Cold Lake-Beaver, and Lesser Slave Lake watersheds	➡	Integrate priority water management frameworks into watershed management plans (e.g. Industrial Heartland and mineable oil sands)	ⓘ	http://www.waterforlife.alberta.ca/01261.html http://nswa.ab.ca/content/integrated-watershed-management-plan http://www.environment.alberta.ca/01768.html http://www.oilsands.alberta.ca/
5.5	Complete and implement watershed management plans for all major watersheds	➡	Assess the effectiveness of the watershed management planning system to achieve desired outcomes	ⓘ	http://www.brbc.ab.ca/index.php?option=com_content&view=article&id=96&Itemid=210 http://www.lswc.ca/
5.6	Complete transboundary bilateral agreements with neighbouring jurisdictions	➡	Montana regarding the water of the St. Mary and the Milk River	ⓘ	http://www.waterforlife.alberta.ca/03328.html http://www.dnrc.mt.gov/wrd/water_mgmt/planning_activities/montana-alberta/default.asp
		➡	British Columbia, Saskatchewan, and the North West Territories, as part of the Mackenzie River Basin Transboundary Waters Master Agreements	ⓘ	http://environment.alberta.ca/3272.html

⇆ Planning stage
🧍🧍🧍 Stakeholder engagement stage
➡ Moving toward final approval
ⓘ Ongoing development or implementation through various Government of Alberta programs
✗ Not yet initiated due to dependency on short/medium-term deliverable
✓ Completed

Short term actions by 2012
Medium-term Actions by 2015
Long-term Actions by 2019

water for life

Handbook for State of the Watershed Reporting (Action 5.1)

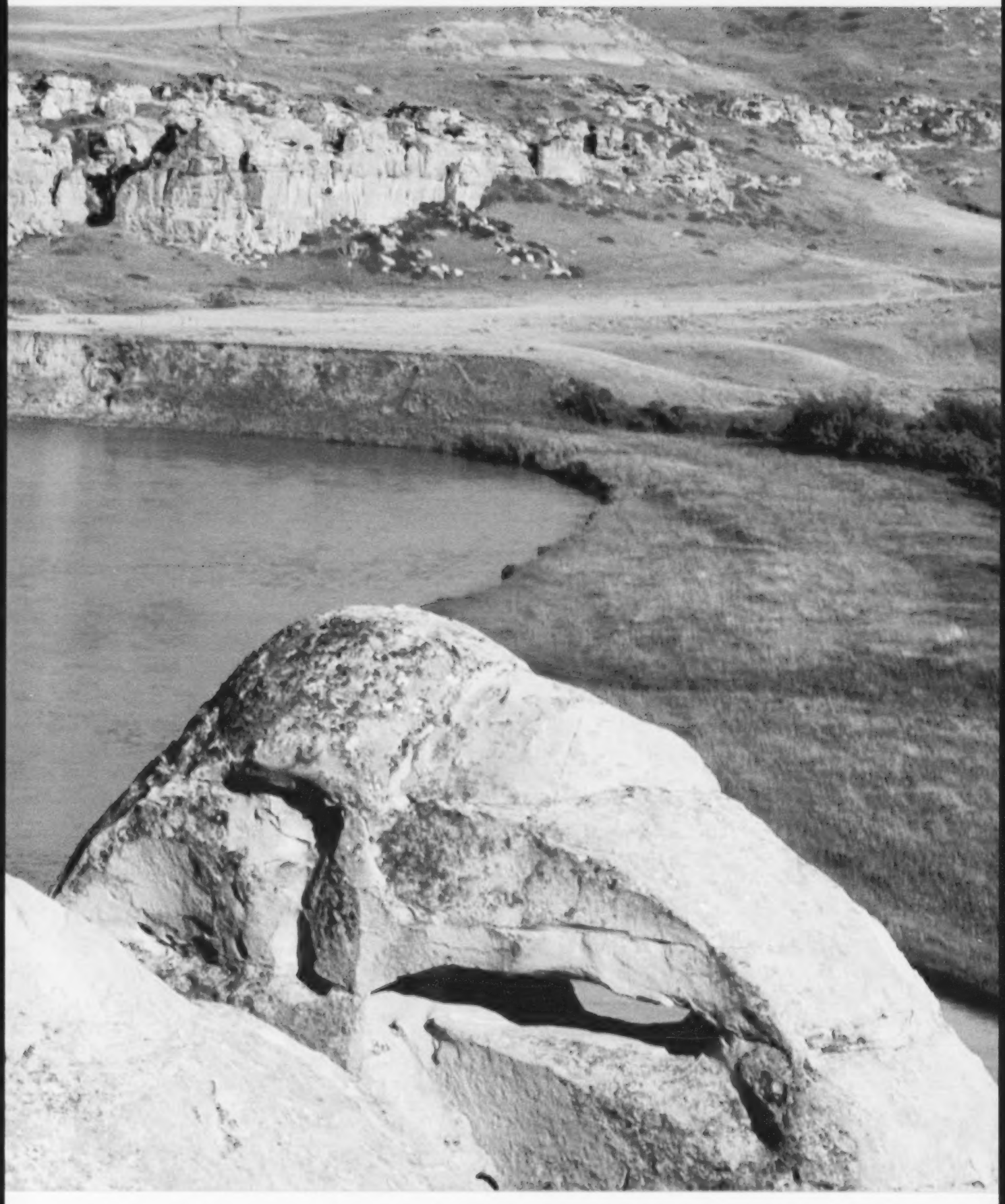
The handbook was drafted by Alberta Environment and Water as part of a series of tools for Watershed Planning and Advisory Councils and other groups involved in developing state of the watershed reports under the *Water for Life* strategy.

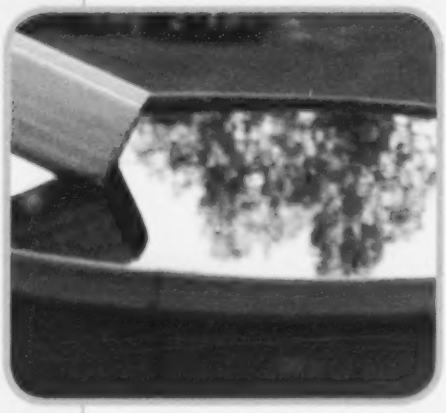
The handbook introduces users to the concept of watershed-scale assessments through health indicators and includes an extensive list of data and information sources from across Alberta.

It is intended to serve as a reference guide to non-technical audiences to assist in assessing and reporting on local watersheds, as well as developing stewardship activities.

The handbook is available for printing through the *Water for Life* website at: http://environment.gov.ab.ca/info/library/8044.pdf.

Copies of the report are available through the Environment Information Centre at: http://environment.gov.ab.ca/info/posting.asp?assetid=8044&subcategoryid=40.





KEY DIRECTION:
WATER CONSERVATION

To help Albertans make wise decisions about water use it will be necessary to demonstrate best management practices in all sectors, and enhance public awareness, enable environmental stewardship and innovation, and support water conservation education. Improving our water use practices through conservation, efficiency, and productivity efforts is key to dealing with the challenge of unpredictable water supplies.

Water Conservation

Water conservation is a basic tool for water management. Its effects can be practiced by individuals as well as large sectors of the economy. Whether the contribution is large or small, water conservation affects overall health of aquatic ecosystems, as well as the quality and quality of Alberta's water.

Key Direction 6.1 Develop tools to integrate environmental, economic, and social values into water management decision-making.

Alberta Institute for Agriculture, Forestry, and the Environment (IAFE)

The Institute has finalized the development of the Ecosystem Services Market Policy Framework for the Government of Alberta. The framework will facilitate the evaluation of policy options to enhance the management of our environment, promote innovation, and enable market-based opportunities to promote conservation and the production of ecosystem services. Also finalized are the recommended strategies for the implementation of the framework and associated supporting mechanisms, infrastructure, communications, and public awareness. Recommendations focused on documenting environmental integrity and on innovation to achieve environmental leadership have also been finalized.

The Institute has completed a report that supports the Policy Framework, recommendations, and strategies for implementation and continues to work with the Government of Alberta and the Land Use Secretariat to develop a conservation and stewardship strategy on public and private lands as a component of the Land-use Framework.

Key Direction 6.2 Develop and implement an enhanced education program to encourage water conservation.

Education serves an important role in changing peoples' attitudes and behaviours towards water. A shift in the way we think about water is needed: from an "abundant" resource to a "scarce" one, and from "an individual right" to access clean, free, water, to a "shared responsibility". Education and information on how to conserve water needs to address the many ways water is used by individuals, industry, and agriculture.

One Simple Act

One Simple Act is a Government of Alberta public information and education program that supports and inspires Albertans to lead more environmentally friendly lifestyles. One Simple Act helps Albertans save energy, reduce waste, and conserve water. Since the inception of the One Simple Act program, Albertans have made individual commitments to conserve over 10.5 million litres of water. The program has also created the One Simple Act school toolkit that provides grades one to six teachers with the tools and resources to have students personally commit to one of ten simple acts that protect the environment. This toolkit is flexible, offering a collection of tools that teachers can draw on based on students' needs.

http://www.onesimpleactalberta.ca/get-involved/school-toolkit.asp

Key Direction 6.3 Work with key water sectors to develop and implement conservation, efficiency, and productivity plans.

Conservation, Efficiency, and Productivity Plans

In December 2008, the Alberta Water Council released a report outlining 21 recommendations for water conservation, efficiency, and productivity (CEP) plans to guide the seven largest water using sectors in setting and meeting CEP planning goals.

The seven sectors include:

- Chemical and petrochemical
- Forestry
- Municipalities
- Power generation
- Irrigation
- Mining
- Oil and gas

To assist sectors in creating their CEP Plans the Alberta Water Council has created an annotated table of contents for CEP Sector Planning in Appendix A of their report: *Recommendations for Water Conservation, Efficiency, and Productivity Sector Planning* (December 2008). It is available online at:

http://www.albertawatercouncil.ca/Portals/0/pdfs/CEP%20Sector%20Plan%20Final%20Report.pdf

Sector CEP Plan progress

The Alberta Water Council has also created a project team to support the development of CEP plans – The Sector Planning for Water Conservation, Efficiency, and Productivity Project Team. The team is intended to serve as a forum for sectors to exchange ideas, experiences, and challenges in developing their plans and provide sectors with a venue to get multi-stakeholder advice regarding how to address these challenges. The team also provides progress reports to the Alberta Water Council and evaluates whether the CEP Framework or Annotated Table of Contents should be adjusted to improve participation or other aspects.

Urban Municipalities

The Alberta Urban Municipalities Association is leading the development and implementation of a CEP plan for the urban municipal sector. The Alberta Urban Municipalities Association's CEP Plan was approved by their membership on November 5th 2009 at their Annual Convention with 89% support. Due to the extensive length of the full report, a shorter policy paper was put forward for approval, rather than the full length CEP Plan. The Alberta Urban Municipalities Association presented their plan to the Alberta Water Council at their March 2010 meeting. The policy paper and complete CEP plan can be found online at http://water.auma.ca/.

The urban municipal CEP plan and its targets are primarily based on input the Alberta Urban Municipalities Association received from members via feedback at Alberta Urban Municipalities Association events and guidance from a team of experts. Their targets focus on: (1) increasing water use reporting, (2) estimating a municipal infrastructure leak index, (3) getting municipal CEP plans in place (that is, plans for individual cities, towns and villages), and (4) implementing incentives or disincentives to promote water efficient fixtures.

The Alberta Urban Municipalities Association has developed a water microsite to assist urban municipalities in implementing the plan by providing information, resources and tools. The microsite is available at http://water.auma.ca/. One of the latest resources to be added to the site is a Water CEP Planning Guide to assist municipalities in completing their own individual plans.

Another new resource is an instructional video to assist water licensees in using Alberta Environment and Water's electronic water use reporting system. Alberta Environment and Water developed the Water Use Reporting System in order to enable Alberta water licence holders to report their water use in support of Water for Life goals. Since it was developed in 2006, licence holders have slowly been making the switch from paper reporting to using the Water Use Reporting System.

The advantages of online reporting versus paper reporting include:

- A common method of reporting for all water users;
- Easy to access information on water use; and
- Ability to measure progress in water conservation.

In recognition of the importance of using the Water Use Reporting System to track progress in water conservation, the Alberta Urban Municipalities Association adopted the following target as part of its CEP Plan: *By December 2010, all urban municipalities with water systems will report water use through Alberta Environment and Water's online Water Use Reporting System.*

To assist municipalities in using the Water Use Reporting System Alberta Urban Municipalities Association, the Alberta Water Council, and Alberta Environment and Water partnered to make an instructional video on how to use the Water Use Reporting System. Although this video was initially created for Alberta Urban Municipalities Association members with an introduction by the Alberta Urban Municipalities Association's CEO, it is relevant to all licence holding sectors. The video can be modified to include a different introduction to target each sector. It is currently posted on both the Alberta Urban Municipalities Association and Alberta Water Council websites.

Despite these efforts towards meeting the goal of all municipalities with water systems reporting water use through Alberta Environment and Water's online Water Use Reporting System, not all Alberta Urban Municipalities Association members were able to meet the target date to report water use online. They continue to encourage their members who are not yet using water use reporting to report water use to begin.

Irrigation

The Alberta Irrigation Projects Association presented the Irrigation Sector CEP plan at the June 24, 2010 meeting of the Alberta Water Council Board. The plan consists of two documents, the plan itself, and a supporting report prepared by AECOM Canada Ltd. The plan includes eight targets and 14 steps to move CEP forward in the Irrigation Sector. Their targets focus on: (1) achieving a 30 per cent increase in combined Conservation, Efficiency and Productivity from 2005 through 2015, (2) having 70 per cent of

irrigated lands in districts under best management practices, namely low pressure drop tube pivots, by 2015, (3) on a ten year rolling average, keeping diversions at or below 2.186 billion m^3 per year, (4) making additional water that has been conserved through efficiency gains available for other uses, (5) growth in irrigation districts will occur using saved water (6) on a ten year rolling average through 2015, irrigation districts will reduce the volume of water diverted from Alberta's rivers, lakes and streams per unit of irrigated area to a level below 441mm, (7) achieving 15 per cent increase in efficiency relative to 2005 levels by 2015 in the areas of on-farm use, conveyance/distribution and return flow, and (8) achieving 15 per cent increase in productivity from the reference yield of 2005, based on indicator crops of sugar beets, potatoes and soft white wheat.

Their 14 steps to move CEP forward in the Irrigation Sector focus on the following: (1) incorporate attitude and commitment into action, (2) irrigation districts will do what works to conserve water and make districts more efficient, (3) the Alberta Irrigation Projects Association will prepare a CEP strategy template for district use and encourage irrigation districts to develop a tailored CEP strategy by their respective annual general meeting in 2011, (4) the Alberta Irrigation Projects Association will encourage and acknowledge CEP efforts of the districts, (5) Alberta Agriculture and Rural Development has initiated an on-farm efficiency program which incents adoption of best management practices on irrigation farms, (6) find new CEP opportunities through research and development, (7) additional funding will be sought to increase CEP efforts, (8) irrigation districts will expand and enhance water measurement and reporting where it is insufficient, (9) river management to enhance the aquatic environment, (10) Alberta Irrigation Projects Association and Alberta Agriculture and Rural Development will target CEP education, (11) opportunities for private irrigation coordination/involvement, (12) water allocation to most needs, (13) working to enhance water quality, and (14) ongoing dialogue of stakeholders.

The Alberta Irrigation Projects Association Board approved the final plan and its targets on September 20, 2010. The Irrigation Districts have been invited to start work on strategies for each district describing how they can contribute to implementing their sector's CEP plan. A template for completing these strategies has been developed for district use, where a CEP plan is not already in place. Since developing the CEP template, two districts have completed their individual CEP strategies with two more in the process of developing CEP strategies.

A key learning for the Alberta Irrigation Projects Association in completing their plan was the need for early and in depth engagement of sector representatives to ensure issues and interests are identified and addressed as early in the process as possible. The time required to complete the plan to date is well over 250 person days and counting.

Forestry

The development of a CEP plan for this sector is being coordinated by the Alberta Forest Products Association. The Forestry sector has established their committee, completed data collection and analysis, and have completed a draft CEP plan which is being internally reviewed by Alberta Forest Products Association members. The Alberta Forest Products Association continues to work to include some members of the forestry industry that are not members of their umbrella organization. Sector engagement has been strong, although staff turnover has been the most significant challenge for completing the CEP plan. They intend to complete external stakeholder consultation with Watershed Planning and Advisory Councils and their public advisory committee by March 2011.

Oil & Gas / Oil Sands Mining

The upstream oil and gas sector established their CEP planning committee as a sub-group of the Canadian Association of Petroleum Producers' Water Task Group, which included members from the Oil Sands Developers Group and the Alberta Chamber of Resources. They decided to develop a single plan for both the upstream component of the oil and gas sector, and the oil sands component of the mining and oil sands sector. The plan was reviewed by internal stakeholders representing over 80 per cent of the sectors' water use, in line with Recommendation 13 of the *Recommendations for Water Conservation, Efficiency and Productivity Sector Planning* report (that is, to focus on the largest water users first). Following internal review, external stakeholder consultation was completed with the ten existing watershed planning and advisory committees. The sector presented their CEP plan, which incorporated constructive feedback from the external stakeholder review, to the town in February 2011 and will present the final plan to Council in March 2011. The most significant challenge this sector faced in developing its CEP plan was addressing the feedback from external stakeholders.

Power Generation

Initially, it was agreed that ATCO Power, EPCOR, and the TransAlta Generation Partnership would work together to develop a CEP plan for the power sector. This sector has faced many challenges in moving towards completing a CEP sector plan. Staff turnover with ATCO Power and TransAlta Generation disrupted their CEP planning committee, while EPCOR underwent corporate restructuring and is no longer involved in power generation. The result of the restructuring at EPCOR is a new company called Capital Power that was formed to focus on power generation and there was a need to confirm their interest in completing a CEP plan. Other issues this sector is facing include considering how water conservation, efficiency and productivity may be affected by other priority environmental initiatives such as reducing air emissions, which will likely require this sectors water use to increase.

The power generation sector has made significant progress in the development of their CEP plan over the last few months. TransAlta Generation, ATCO Power and Capital Power have worked together to complete their work plan, collect the data required to develop a sector plan and are currently analyzing the data. Each individual company intends to undertake external stakeholder review and incorporate the feedback into their sector's plan. The sector has committed to completing their CEP plan by October 2011 and intends to present their plan to Council then.

Chemical and Petrochemical

The Council's chemical and petrochemical sector contains two umbrella organizations: the Chemistry Industry Association of Canada, which represents chemical companies; and the Canadian Petroleum Products Institute, which represents petroleum refineries and marketers. Because of their differing water uses and umbrella organizations, the two sub sectors have agreed to create their plans independently of one another.

Downstream Petroleum Products

This sector represents petroleum refiners and marketers. Their umbrella organization, the Canadian Petroleum Products Institute is leading the development of this sub sector's CEP plan. The Canadian Petrochemical Products Institute collects water use data at the national level, which can then be broken down by province. They have completed the necessary data collection and data analysis and the development of a draft CEP plan is underway. This sector will engage external stakeholder groups in the Edmonton area. They intend to be prepared to present their plan to the Council in March 2012. Among the most significant challenges this sector has faced in developing their CEP plan have been the volume of resources required to complete a sector plan, issues surrounding collaborating with competitors and the confidentiality of the data required, engaging the most affected stakeholders in the Edmonton area, and analyzing the cost benefit regarding achieving the sector's interests considering different members have already achieved CEP activities. A key consideration for this sector moving forward is how they can devise an approach that is as administratively efficient as possible, so as not to make CEP plans cumbersome for operators to complete and implement.

Chemical Producers

This sector is represented by the Chemistry Industry Association of Canada (CIAC), formerly the Canadian Chemical Producers Association. This sector includes a small number of large member companies that operate in Alberta, particularly in the Fort Saskatchewan/Industrial Heartland region and near Joffre/Prentiss. This sector is working to finalize the necessary data collection, analysis and have a draft CEP plan in development. This sector intends to be prepared to present its CEP plan to the Council in March 2012. Among the most significant challenges this sector has faced in developing a CEP plan are that the members of this sector were heavily involved in the development of the Water Management Framework for the Capital Region and Industrial Heartland and are more focused on evaluating and assessing their impacts on air quality in the region in which they operate. While regional initiatives such as watershed planning and land use framework implementation will complement this sector's understanding of their water use, being involved in those processes has commanded some of their resources that may otherwise have been dedicated to developing the CEP plan or addressing other environmental concerns.

Rural Municipalities

The rural municipal sector was not initially identified as a priority for CEP planning within the "municipal" group of sectors. This sector is represented by the Alberta Association of Municipal Districts and Counties. After researching the necessity for a separate rural municipal plan and the resources available for this project, the Alberta Association of Municipal Districts and Counties Board of Directors recently decided that it would not be pursuing the development of a separate sector plan. Rather, the Alberta Association of Municipal Districts and Counties will assist in promoting other sector plans that cover rural municipal water use, such as the urban municipal CEP plan and the irrigation sector CEP plan.

The table below provides a summary of CEP planning activities by sector. The activities of each sector are described in more detail below the table.

	Urban Municipal	Irrigation	Forestry	Oil & Gas and Oil Sands Mining	Power Generation	Downstream Petroleum Products	Chemical Producers
Lead Organization(s)	Alberta Urban Municipalities Association	Alberta Irrigation Projects Association	Alberta Forest Products Association	Canadian Association of Petroleum Producers & Alberta Chamber of Resources	TransAlta & ATCO & Capital Power	Canadian Petroleum Products Institute	Chemistry Industry Association of Canada
Planning Team Established	✓	✓	✓	✓	✓	✓	✓
Work Plan Complete	✓	✓	✓	✓	✓	✓	✓
Consultation Method Selected	Option B	Option B	Option C	Option C	Option B and C by individual company	Option C	Option C
Data Collection Complete	✓	✓	✓	✓	✓	✓	✓
Data Analysis Complete	✓	✓	✓	✓	✓	March 2011	✓
Draft CEP Plan Complete	✓	✓	✓	✓	✓	April 2011	May 2011
Stakeholder Review Complete	✓	✓	March 2011	✓	By company	June 2011	Sept. 2011
Revised Draft Plan Complete	✓	✓	March 2011	✓	Sept. 2011	Sept. 2011	Oct. 2011
Plan Approved by Sector	✓	✓	June 2011	March 2011	Oct. 2011	Dec. 2011	Nov. 2011
Presentation to Alberta Water Council	✓	✓	June 2011	March 2011	Oct. 2011	March 2012	March 2012
Est. Completion	✓	✓	June 2011	March 2011	Oct. 2011	March 2012	March 2012

Legend

✓ = action complete

⇄ = action underway

✗ = action not yet begun

Consultation Methods:

Option A CEP planning team is multi-stakeholder

Option B CEP planning team is made up of sector members only, and a separate multi-stakeholder advisory committee is established

Option C CEP planning team is made up of sector members only and the sector provides copies of its draft plan to various stakeholders during its development

	Key Actions		Deliverables	Status	Information
6.1	Develop tools to integrate environmental, economic, and social values into water management decision-making	▸	Develop a policy framework for ecosystem service markets with the Alberta Institute for Agriculture, Forestry, and the Environment	◐	
		▸	Implement a market-based ecosystem services incentive program	◐	
		▸	Integrate economic instruments and fill cost accounting tools into priority water policy and planning initiatives	⇆	
6.2	Develop and implement an enhanced education program to encourage water conservation	▸	Engage Albertans in water conservation activities through Education and Outreach programs	◐	http://www.onesimpleact.alberta.ca
		▸	Develop information and education resources to help Albertans understand the uses of water in Alberta and opportunities for conservation	◐	http://www.waterforlife.alberta.ca/01547.html http://www.waterforlife.alberta.ca/01391.html
6.3	Develop tools to integrate environmental, economic, and social values into water management decision-making	▸	Develop Conservation, Efficiency, and Productivity Plans	◐	http://www.waterforlife.alberta.ca/03335.html http://www.albertawatercouncil.ca/Projects/WaterConservationEfficiencyandProductivity/tabid/115/Default.aspx v
		▸	Implement Conservation, Efficiency, and Productivity Plans	◐	
		▸	Establish an ongoing monitoring program to ensure all sectors are achieving water conservation, efficiency, and productivity outcomes	⇆	

⇆ Planning stage
Moving toward final approval
Ongoing development or implementation through various Government of Alberta programs
✗ Not yet initiated due to dependency on short/medium term deliverable
✓ Completed

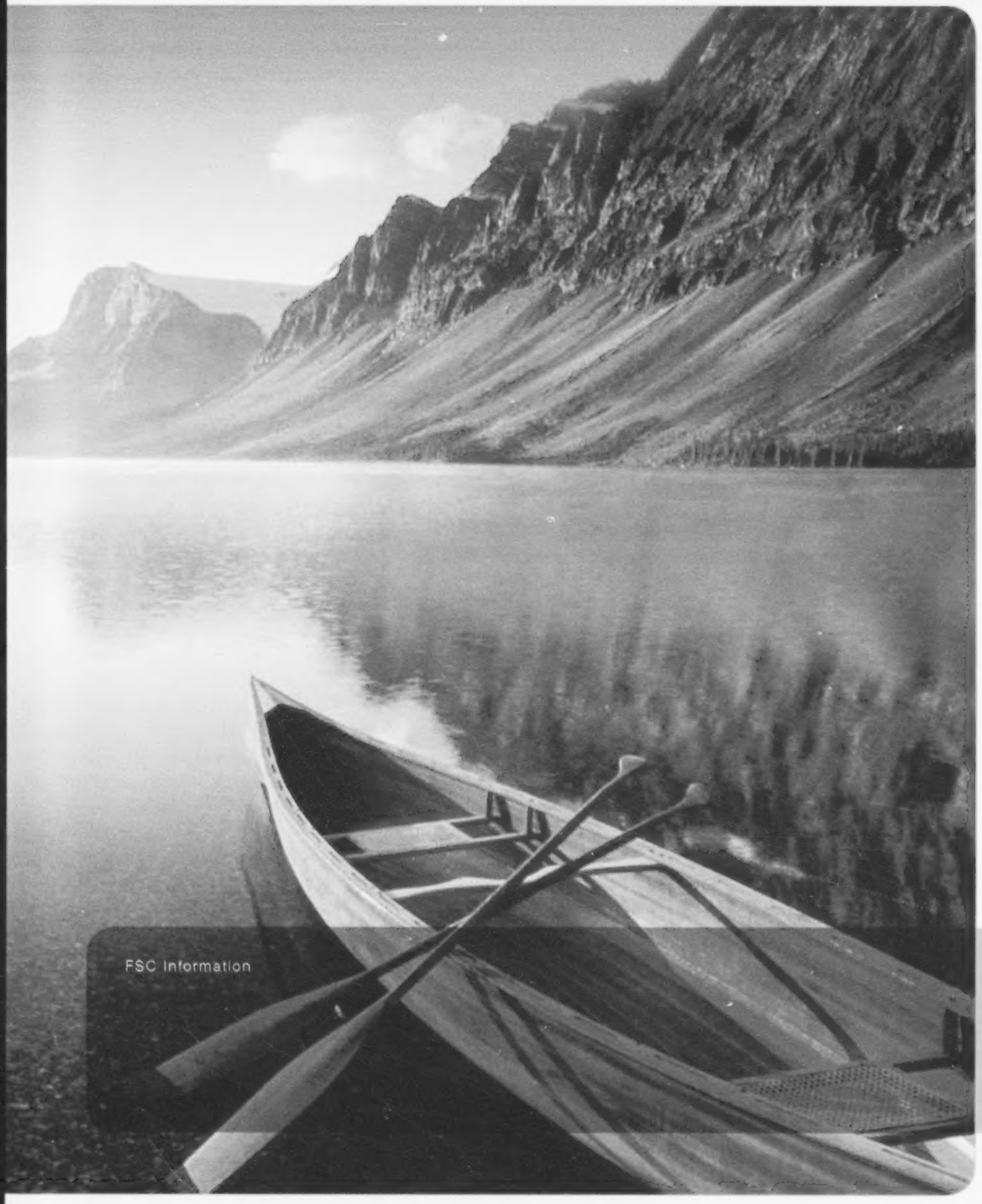
Short term actions by 2012
Medium-term Actions by 2015
Long-term Actions by 2019

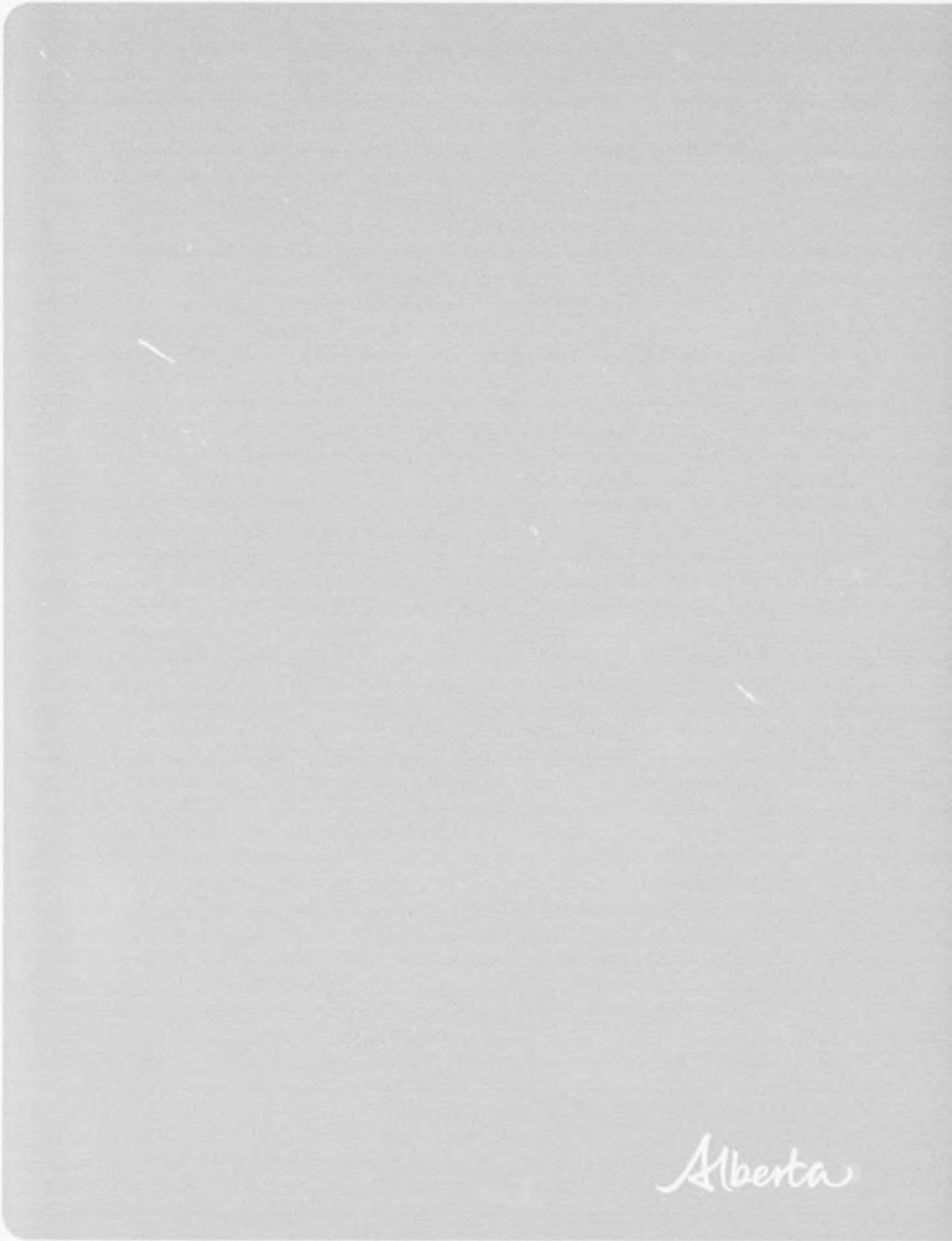
water for life

A water efficiency labelling initiative to help consumers identify products that use less water (Action 6.1)

Most people are familiar with the Energy Star labelling on their appliances, which indicates the electrical efficiency of the product. In August 2009, the Canadian premiers agreed to implement a Canada-wide water efficiency labelling program to reduce water consumption by informing consumers of the most water efficient products on the market. Modelled on the United States' Environmental Protection Agency's WaterSense program, the idea was first brought to Canada by the Canadian Water and Wastewater Association.

In January 2011, Environment Canada signed a partnership agreement with the Environmental Protection Agency. The promotional partnership agreement calls for the Environmental Protection Agency and Environment Canada to work together to inform Canadians about the WaterSense label. The agreement outlines the activities and roles of each party that are needed to ensure success of the program in Canada. The agreement between these two agencies clears the way for the Environmental Protection Agency to accept and process partnership agreements from Canadian entities including the provinces.


FSC Information


Alberta